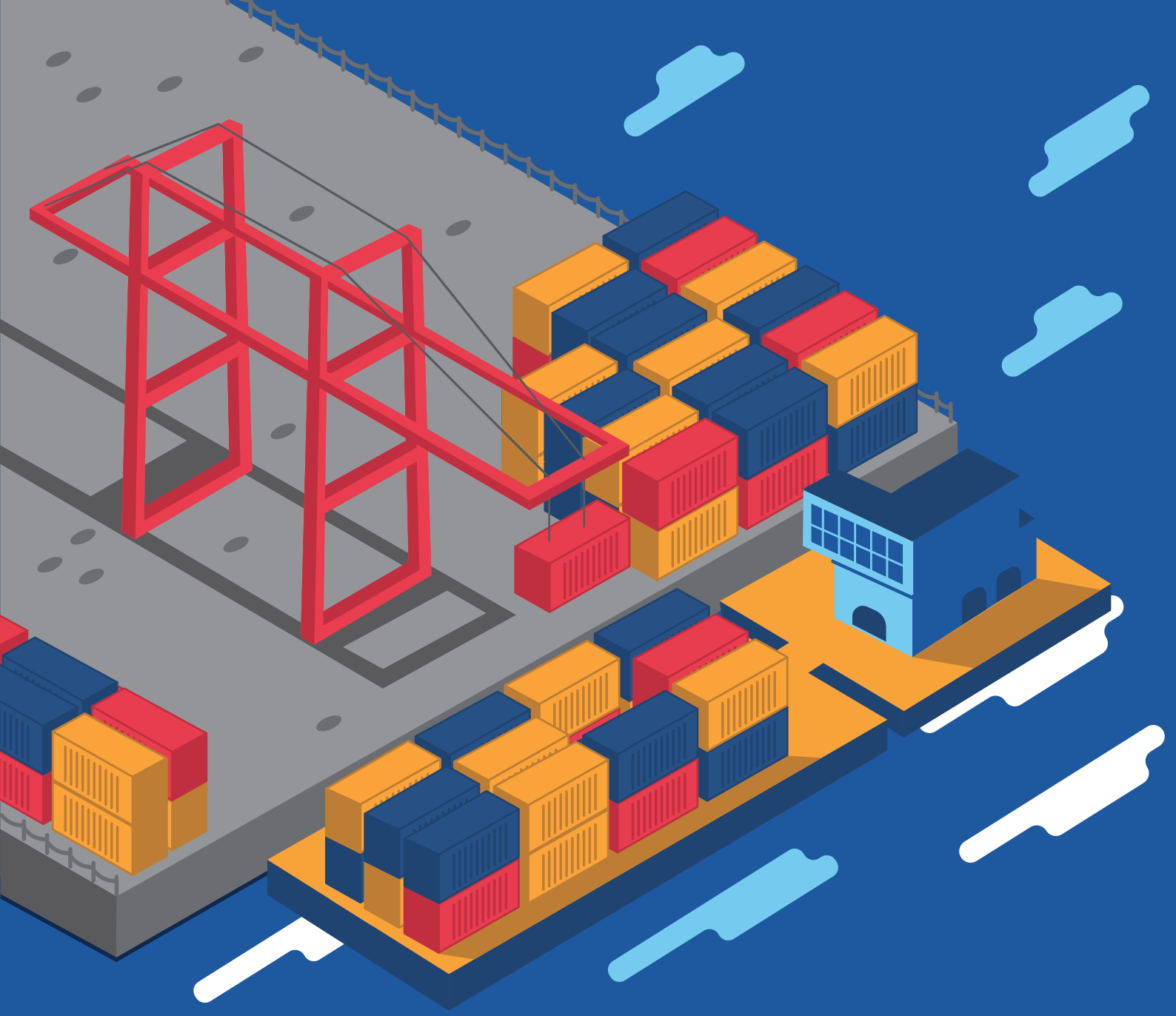

ANNUAL REPORT 2020

INLAND NAVIGATION IN EUROPE
MARKET OBSERVATION

CCNR
CENTRAL COMMISSION
FOR THE NAVIGATION OF THE RHINE

European Commission

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September 2020

FOREWORD

Bruno Georges
CCNR Secretary General

It is with great pleasure that the Central Commission for the Navigation of the Rhine (CCNR) presents its 2020 European Inland Navigation Market Observation report, in partnership with and supported by the European Commission.

The new Market Observation report highlights the key results for the year 2019 in relation to various aspects of European inland navigation, in particular, inland waterway freight transport on the main waterways in Europe, inland waterway passenger transport, inland waterway traffic in ports, transport companies, freight rates, the cargo fleet evolution, employment and river cruises. The report also describes the evolution of water levels and navigation conditions on the Rhine and the Danube.

Although this report relates mostly to the market developments in 2019, it was of great importance to place a strong focus as well this year on short and longer-term outlooks for our sector, particularly in light of the Covid-19 crisis. This is reflected in the 2020 report, which gives a detailed short-term outlook on the impact of the pandemic both for cargo and passenger transport. The report also analyses the longer-term outlook for major cargo segments such as agricultural products, food/feedstuffs, iron ore and steel, coal, building materials, chemicals, petroleum products and containers. This was an opportunity to look at the expected impacts of major transformations of society in our sector, such as energy transition, and the possible opportunities that come with them.

The Danube, Mosel and Sava Commissions shared with our organisation all their relevant statistical and market information specific to their river basins. This year, the report presents for the first time, information about inland waterway traffic regarding the Sava river basin. This allowed us to expand further the statistical sources of this report for specific geographical areas. My wish is that these fruitful collaborations with river commissions can continue and deepen in the future. I would like to thank them warmly for their contributions.

Representatives of the sector, in particular the European Barge Union (EBU), the European Skippers Organisation (ESO), and the Centraal Bureau voor de Rijn-en Binnenvaart (CBRB) also brought their most valuable advice and expertise together with important comments and recommendations.

I also value our excellent cooperation with Eurostat, national statistical offices, seaports and inland ports, as well as national and regional waterway and shipping administrations, without whom the collection of large and detailed datasets would not have been possible. As was the case last year, the corporation of inland tanker barge owners (CITBO) delivered raw data on spot market freight rates and time charter renting prices for liquid cargo transport in the FARAG region (Vlissingen-Antwerp-Rotterdam-Amsterdam-Ghent). This allowed an analysis to be included on the evolution of freight rates for liquid cargo in this important region for European inland waterway transport. Data on dry cargo freight rates were collected and delivered by the research company Panteia.

The information on river cruises is based on a collaboration with the sector expert Mr Arnulf Hader, and with the research company SeaConsult, whose data and information proved once again to be very valuable.

Furthermore, I would like to thank the authors of this report from the CCNR Secretariat and all the other contributors involved in the elaboration of the report, despite the many constraints caused by the Covid-19 crisis in the first half of 2020.

Last but not least, I am very happy that the European Coordinator for the Rhine-Alpine Corridor, Paweł Wojciechowski, gladly accepted to write the next foreword of this year's report, given the stronger ties we have built over the last years for the benefit of the further development of inland waterway transport along this corridor.

We hope that our report will once more serve as a tool to enable strategic decisions for the benefit of European inland waterway transport.

While it has always been the tradition to wish you a pleasant reading of our Market Observation reports, I would also like, in the current circumstances, to express my best wishes to you and yours, hoping very much that our sector's activity will quickly recover and thrive in the best possible conditions.

CCNR
CENTRAL COMMISSION
FOR THE NAVIGATION OF THE RHINE

It is an honour for me to address you on the publication of the 2020 European Inland Navigation Market Observation report, presented by the Central Commission for the Navigation of the Rhine (CCNR).

It has been five years since the European Commission designated me as the European Coordinator for the Rhine-Alpine Corridor. I quickly established an excellent working and personal relationship with the CCNR.

Inland navigation plays a crucial role in the Rhine-Alpine Corridor. Accounting for 25% of the corridor's length, it carries more than 50% of the corridor's international freight transport. The corridor does not only concern the Rhine. The Neckar and – partly – the Moselle are two other important elements of the inland waterway corridor network.

The inland waterway infrastructure on the corridor is well developed. For the most part, it already meets the criteria established in the European Union guidelines for the Trans-European Transport Network (TEN-T). However, challenges remain, notably with regard to the target draught of 2.5 metres. This has consequences for an extended section of the river, in particular in periods of extreme drought and low water, such as those experienced in recent years. In my fourth Corridor Work Plan, to be published later this year, I have laid emphasis on the need to enhance the fairway depth on the Middle Rhine. This should increase the reliability and improve navigation conditions.

The Rhine-Alpine Corridor is, by definition, multimodal. Multimodality plays a crucial role in view of its further development and, in this regard, I would like to underline the importance of inland ports. Tri-modal terminals connecting inland waterways, rail and road, as well as bi-modal barge-road terminals, support the functioning of the corridor.

Ensuring compliance of the inland navigation infrastructure with the TEN-T standards will allow us to keep the dominant position of this mode of transport on the corridor. This is even more important now as the general policy context is evolving. Sustainability goals and climate change mitigation and adaptation are key drivers of the EU's infrastructure policy. Last year the European Commission presented the European Green Deal, with the ambition for Europe to be the first climate-neutral continent in the world by 2050, with a 50% reduction in greenhouse gas emissions by 2030. It is of utmost importance to strengthen our commitment to decarbonisation by promoting projects that shift transport from road to inland waterways and rail.

The new Connecting Europe Facility (CEF) for 2021-2027 will be instrumental in delivering on the Green Deal objectives. The vast majority of CEF supported actions will relate to sustainable modes of transport, including inland waterways. The CEF will also support intermodality and the deployment of alternative fuels, thus making the transport system more efficient and resilient.

The corridor concept is based on the cooperation between all stakeholders. This applies equally at the level of inland navigation. I have had many opportunities to meet and talk to sector representatives, including inland waterway managers, port managing authorities, barge owners and operators. I believe that cooperation and participation of all these stakeholders need to be enhanced and supported, in order to ensure the positive impact of the corridor activities. Only by jointly concentrating our efforts on common goals, can we ensure the sustainable development of the corridor.

Over recent years, we have experienced more and more the low water level phenomenon on the Rhine. It has had, and will in all likelihood continue to have, an impact on inland waterway transport. This year we are facing a crisis of another dimension, the Covid-19 pandemic, the long-term impact of which is difficult to predict. However, we must face this together and find jointly appropriate solutions.

I have always found the market reports and quarterly statistics provided by the CCNR very useful. I join the CCNR's Secretary General Bruno Georges in wishing you a pleasant reading of the 2020 Annual Report.

Paweł Wojciechowski

European Coordinator for the Rhine-Alpine Corridor

Rhine Alpine


Kiel
Lübeck
Hamburg
Bremen
Amsterdam
Rotterdam
Nijmegen
Hannover
Münster
Magdeburg
London
Duisburg
Antwerp
Dunkirk
Brussels
Lille
Cologne
Liège
Koblenz
Valenciennes
Frankfurt am Main
Luxembourg
Trier
Le Havre
Rouen
Mannheim
Metz
Nuremberg
Stuttgart
Regensburg
Paris
Strasbourg
Basel
Chalon-
sur-Saône
Lyon
Mantua
Venice
Ferrara
Marseille


Szczecin
Berlin
Dresden
Prag
Linz
Vienna
Bratislava
Budapest
Belgrade
Ruse
Constanța

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SUMMARY

In 2019, the overall macroeconomic framework conditions did not make it easy for the inland navigation sector to reach a growth in transport volumes. World trade slowed down because of protectionist measures such as tariffs on grain, steel and cars, and industrial production decreased in several branches. Nor did several national policies favour transport activity.

Sands, stones, gravel

In the Netherlands and in Belgium, environmental policies to limit emissions (NOx emissions and spread of PFAS concentrations) reduced the activity in the construction sector, resulting in strongly falling volumes of sands, stones, and gravel on Dutch inland waterways (-13%) in 2019. In Belgium, the decrease was less severe (-3%). In Germany, France, and on the Rhine, such policies did not exist, and volumes in the construction segment continued to grow, by 15% in Germany, 14% in France and by 21% on the Rhine.

Iron ore

Iron ore transport in western Europe suffered from the steel production slowdown, which resulted in a decrease of iron ore volumes by 9% in the Netherlands and by 7% in Germany and on the Rhine. On the Upper, Middle and Lower Danube, iron ore transport increased (+17.5% on the Middle Danube and +1% on the Lower Danube), due to better navigating conditions and more steel production.

Agribulk and food products

For agricultural transport, the lower Danube region and France enjoyed a rapid growth in 2019, with +21% in Romania and +11% in France. After several years of decreasing volumes, agricultural transport increased by 4% in Germany, due to better harvest results, after several years of falling results. In the Netherlands, there was a decrease of 3%, in Belgium-Flanders of 13%, and in Belgium-Wallonia of 14%. Food products and foodstuffs grew strongly on the Upper Danube.

Chemicals

Chemical transports were higher in almost all major IWT countries and regions in Europe: in the Netherlands (+16%), Germany (+5%), on the Rhine (+9%), in Belgium-Flanders (+4%), in France (+6%) and in Romania (+34%).

Coal

Coal transport is on a structural downward path in western Europe, due to the phasing out of coal fired power plants. On the Rhine, coal transport lost 5%, on the Moselle even 25%, and on the Neckar 32.6%. Overall, on German inland waterways the decrease amounted to 9%. In the Netherlands, coal traffic was also reduced (-10%), as in Belgium-Flanders (-6%) and Belgium-Wallonia (-18%). On the Lower Danube, coal transport decreased by 9%, but it increased by 29% on the Middle Danube.

Containers

Container transport on the Rhine reached 2.04 mio. TEU, which was 4.0 % less than in 2018, but the total weight of the goods in containers was 2.9% higher, amounting to 15.16 mio. tonnes. The 2018 low water period still had an influence on Rhine container transport, as contracts with railway operators had been concluded in late 2018 and were still running in 2019. The continuing congestion in the ports of Rotterdam and Antwerp also had a negative impact.

On other rivers and canals, container transport mostly continued its upward trend, such as on the Albert Canal in Belgium-Flanders, where a growth of 9.5%, totaling 577,000 TEU could be observed. On the Brussels-Scheldt Maritime Canal, the growth rate was 1.8%, totaling 201,000 TEU.

Mainly due to strikes of harbour workers in the ports of Le Havre and Rouen in December 2019, the TEU figures were 1% lower on the Seine, with 263,000 TEU. On the Elbe (146,000 TEU) and the Mittelland Canal (157,000 TEU) in northern Germany, container transport continued its upward trend in 2019 (+13% and +12%).

Port traffic

In the port of Antwerp, 56,585 inland vessels loaded and unloaded 101.3 mio. tonnes of cargo in 2019, compared to 99.3 mio. tonnes in 2018. In the port of Constanța, 10,395 inland vessels called in 2019, where river traffic increased by almost 20%, to reach 15.1 mio. tonnes, mainly driven by more agricultural products, iron ore and chemicals. This was a parallel to the strong growth on a national level.

The largest European inland port, Duisburg, had an overall reduction of 0.6% in inland water traffic, and a 1% reduction for iron ore, which has a share of 41% (19.6 mio. tonnes out of 47.8 mio. tonnes). Coal traffic lost 7%, iron and steel 8%, but sands, stones and gravel gained 42%.

In Paris, the second largest European inland port, total volumes of 25.3 mio. tonnes represented an increase of 14.6%. This was mainly driven by a 17% plus for sands, stones and construction materials, which climbed to a share of 78% of total waterside traffic (19.6 mio. tonnes out of 25.3 mio. tonnes) in 2019.

Cargo fleet

The dry cargo fleet in Rhine countries (number of self-propelled vessels and barges) had 7,033 units in 2019 and the liquid cargo fleet counted 1,433 units, according to national fleet register data. For the dry cargo fleet in Rhine countries, this was - for the first time since 2011 - a higher figure than in the previous year (+1%). The dry cargo loading capacity was 2.6% above the 2018 level, with 10.6 million tonnes. There were also 1,319 push and tug boats in Rhine countries.

The dry cargo fleet in Danube countries comprised 400 push boats and 242 tugs as well as around 409 self-propelled dry cargo vessels and circa 2,100 dry cargo barges, amounting together to 3.3 million tonnes.

The newbuilding rate in 2019 continued its slight recovery, both in the dry cargo and in the liquid cargo segment. Twenty new dry cargo vessels entered the European market in 2019, 42 new tanker vessels, and three new push & tugs. The distribution per country shows that 51% of the new vessels were registered in the Netherlands, 22% in Germany, 14% in Luxembourg, 9% in Belgium, 2% in France and 2% in Switzerland.

River cruises

The growth of the European river cruise sector in 2019 was visible due to three main indicators:

- High newbuilding rate: 19 new river cruise vessels entered the European market, with 3,131 beds. These new vessels are planned to sail on Rhine, Danube and for a small part on the Douro.
- Nearly 10% growth in demand: the number of cruise passengers on European rivers increased by 9.9%, to reach 1.79 million passengers. Passengers from non-european countries (USA, Canada, Australia, New Zealand, etc.) had a share between 44 and 49% in 2019.
- Growth of cruise vessel traffic: on the Rhine, 2,929 transits of cabin vessels at the Upper Rhine lock of Iffezheim were registered (+24% compared to 2018), 3,668 on the Upper Danube (+1% above the already high level in 2018), 5,141 on the Middle Danube (+30%), and 1,017 on the Lower Danube (+34,9%).

Outlook

Due to the Covid-19 crisis, the activity in passenger transport (cruise and day trip excursion traffic) came to an almost complete standstill in the first half year 2020. For cargo transport, the reduction was less severe, depending on cargo segment and region. Based on a comparison with the drop of GDP during the financial crisis in 2009 and its impact on IWT transport demand in 2009, a first estimate of the impact of the Covid-19 crisis is possible. This estimate points to a possible reduction of around 20-25% of cargo transport in IWT in 2020 if the severe lockdown measures continue throughout the whole of the year 2020. Although this estimate is surrounded by a high degree of uncertainty, the results for waterside traffic in several Rhine ports in April 2020 roughly confirmed these estimations.

The report also contains several long-term outlooks regarding major cargo segments. Energy transition will continue to have an important effect on transport volumes in inland navigation. This concerns coal in particular. Liquid mineral oil products will continue to be an important component of the energy sector and of inland navigation volumes for the next decade, but a gradual decline is underway in certain regions. For chemicals, the outlook is far more positive. Regarding agricultural products and foodstuffs, it is expected that a certain regionalisation of production and a change in consumer habits to more regional products will influence long-distance transport. A further slowdown of world trade is expected to have an influence on the growth rates in container transport. The Covid-19 crisis will follow the same path as these already existing trends.

01

MACROECONOMIC CONTEXT AND OUTLOOK

- **Economic indicators in the EU such as industrial production and trade (exports and imports) reduced sharply in 2019. This was aggravated by trade tensions, in particular between the US and China.**
- **Protectionist measures such as extra tariffs on cars and steel and the slowdown in industry production contributed to a decrease of 15% in iron ore transport on the Rhine between 2017 and 2019, which was aggravated by modal shifts in the wake of the low-water crisis of 2018.**
- **Due to the Covid-19 pandemic, the EU Commission expects the EU economy to contract by 7.5% in 2020 and to grow by around 6% in 2021. A large downside risk to this projection is a longer-lasting pandemic.**

KEY MACROECONOMIC DEVELOPMENTS
IN EUROPE IN 2019

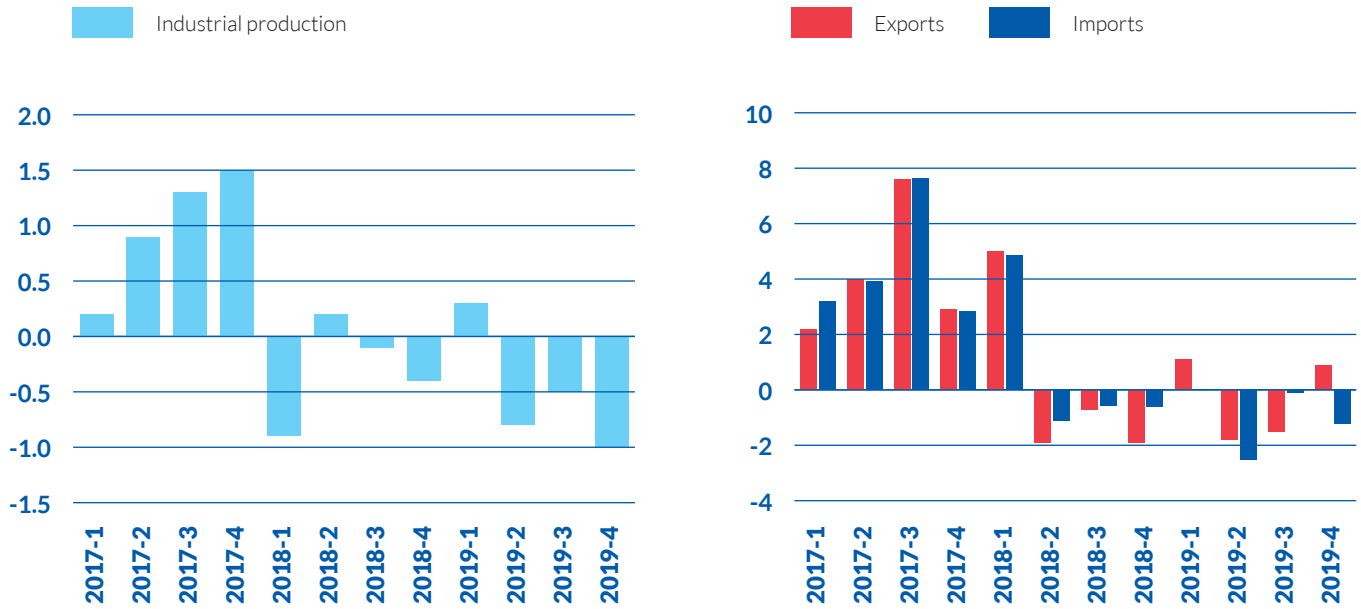
Europe saw a sharp contraction of several economic indicators in 2019, notably in the manufacturing sector.[1] A major reason for this manufacturing crisis were trade tensions, which already started to emerge between the US and China years ago and escalated further in 2019. Protectionist measures were also introduced by other countries. The most affected goods were grain, particularly soybean, cars and steel products.[2]

These trade tensions were spilling over to Europe more and more, due to cross-border production and logistics chains. Several European car manufacturers produce cars in the US, which are sold to China, and vice-versa. Protectionist trade barriers such as extra tariffs on steel and cars had negative effects on European steel production, and on iron ore transport on the Rhine. Iron ore transport had been growing between 2013 to 2015, from 24.6 million tonnes up to 26.0 million tonnes, and remained stable until 2017. Between 2017 and 2019 it descended to 21.6 million tonnes. Iron ore transport in 2018 and 2019 also declined because steel manufacturers shifted certain volumes from barge to rail in view of the low water problems on the Rhine.

Countries with specific vulnerabilities are export-intensive economies such as Germany, the Netherlands, Hungary, the Czech Republic and Slovakia. In all of these countries, except for the Netherlands, car manufacturing has a significant share in industry production and the automobile cluster represents a relatively large part in overall added value and employment. The result was a weakening of EU industrial production and of EU exports and imports, which contrasted sharply with the positive trend that was present until 2017.

[1] This part A is mainly based on European Economic Forecast of the European Commission (Autumn 2019), published in November 2019 (Institutional Paper 115).
[2] Source: United Nations Conference on Trade and Development (UNCTAD), Review of Maritime Transport 2019

FIGURES 1 AND 2: **GROWTH RATE OF EU INDUSTRIAL PRODUCTION, EU EXPORTS AND EU IMPORTS PER QUARTER COMPARED TO THE PREVIOUS QUARTER *** (IN %)



Source: OECD Key Short-Term Economic Indicators
** Growth rates based on seasonally adjusted data.*

Further improvements in the labour market, such as a declining unemployment rate and rising employment figures, acted as stabilizers for the European economy in 2019, and held up private consumption at a high level.

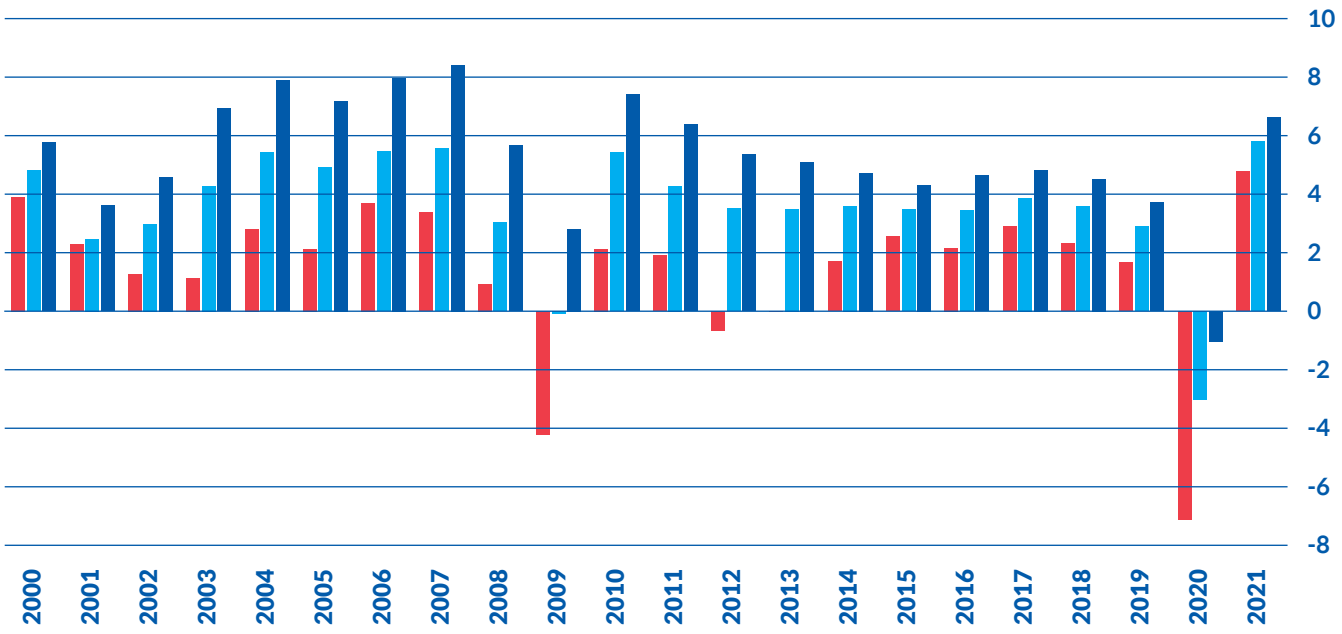
MACROECONOMIC OUTLOOK
FOR 2020 AND 2021

Macroeconomic scenarios

Given the large uncertainties and tremendous challenges that the Covid-19 pandemic imposes on the global economy it is extremely difficult to give an outlook of what can be expected. The International Monetary Fund (IMF) has therefore chosen to present an optimistic baseline scenario based on the assumption of a swift recovery of the economy in 2021 and three additional scenarios relating to a longer virus outbreak in 2020, a new outbreak in 2021, and a longer outbreak in 2020 plus a new outbreak in 2021.

In the optimistic baseline scenario of the IMF, the pandemic is assumed to fade in the second half of 2020, allowing for a gradual lifting of containment measures. Yet, in this optimistic scenario, the global economy is projected to contract sharply by -3.0% in 2020, far worse than during the 2008-2009 financial crisis. The forecast for the European Union points to a stronger initial decline (-7.1%) than for other parts of the world.[3]

FIGURE 3: **PERCENTAGE CHANGE OF GROSS DOMESTIC PRODUCT** (IN CONSTANT PRICES) **COMPARED TO ONE YEAR EARLIER AND THE FORECAST FOR 2020 AND 2021 IN THE OPTIMISTIC BASELINE SCENARIO**



Source: IMF World Economic Outlook Database, Outlook from April 2020

[3] *This part is based on the World Economic Outlook, published in April 2020 by the International Monetary Fund (IMF).*

Similar to the IMF projections, the macroeconomic forecast of the European Commission of 6 May 2020 (ECFIN Spring 2020 Economic Forecast)[4] for 2020-2021 projects that the Euro Area economy will contract by a record 7.8% in 2020 and grow by 6.3% in 2021. The EU economy is forecast to contract by 7.5% in 2020 and grow by around 6% in 2021. The risks surrounding this forecast are exceptionally large and concentrated on the downside. A more severe and longer lasting pandemic than currently envisaged could cause a far larger fall in GDP than assumed in the baseline scenario of this forecast.

In the optimistic baseline scenario of the IMF, the global economy is projected to recover in 2021, and grow by 5.8% in 2021 (the EU by 4.8%). However, there are also three other IMF scenarios, reflecting the possibility that the pandemic could be more persistent than assumed.

The first alternative scenario assumes that the fight against the spread of the virus in 2020 takes roughly 50% longer than assumed in the baseline scenario. If this were to be the case, then global output would be 3% lower than in the optimistic baseline scenario in 2020. Although the initial decline would be stronger for advanced economies such as the European Union, their higher fiscal capacity and greater financial resources to fight against the crisis and to maintain incomes are assumed to result in less economic scars (long term effects on unemployment, public debts) compared to emerging market economies.

The second alternative scenario considers the impact of another, but milder, outbreak occurring in 2021. In this second alternative scenario, global output in 2021 would be almost 5% below the optimistic baseline scenario in 2021.

The third alternative scenario assumes the potential impact of both the outbreak lasting longer in 2020 and a second outbreak occurring in 2021. In this case, global output in 2021 would be almost 8% below the optimistic baseline scenario. Tighter financial conditions and more limited fiscal space in emerging market economies would again amplify the impact in these countries.

The European Central Bank (ECB) and other central banks are fighting against the crisis with large asset purchase programmes. Current forecasts do not point to a high rate of inflation in 2020, at least not for the Euro area.[5] A weak consumer demand and falling energy and commodity prices are thought to hold inflation rates down. For several countries in eastern Europe, however, inflation is nevertheless a threat, as their currencies are devaluating, due to the flight of capital into 'safe haven currencies' such as the US Dollar, Japanese Yen and Swiss Franc. For eastern European countries, this might lead to imported inflation.

Commodity prices

International and domestic travel restrictions throughout the world and a sharp reduction in road traffic are leading to an unprecedented decline in oil demand, as the transport sector accounts for more than 60% of global oil demand. Between August 2019 and March 2020, oil prices fell from $57.60 to $32.30 (-39.6%). Major oil producing countries failed to reach an agreement to reduce production, which accelerated the decline.[6] This price evolution goes hand in hand with a sharp accumulation in oil stocks, voluntary production cuts and a reduction in oil output.

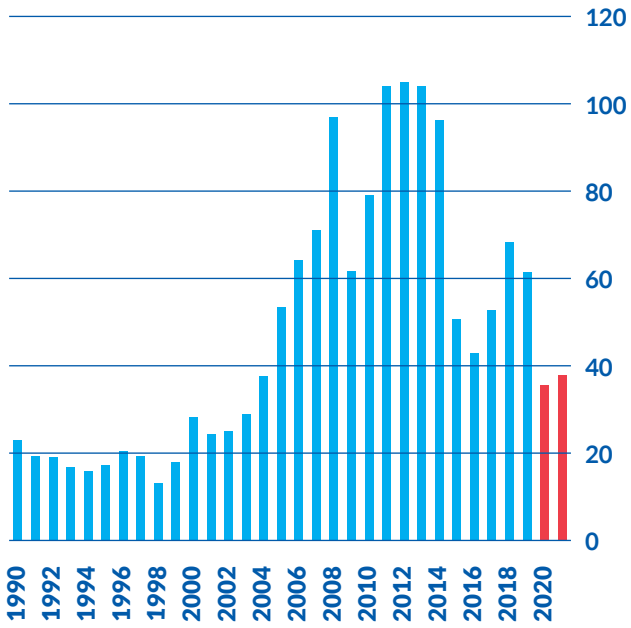
[4] See: European Commission (2020), Spring 2020 Economic Forecast: A deep and uneven recession, an uncertain recovery; https://ec.europa.eu/commission/presscorner/detail/en/ip_20_799 (4 June 2020)
[5] According to the IMF forecast from April 2020, average consumer prices in the Euro area are expected to grow by only 0.23% in 2020, and by 0.98% in 2021, after a rate of 1.2% in 2019.
[6] See: New York Times, Oil Prices Nose-Dive as OPEC and Russia Fail to Reach a Deal, 6 March 2020

Futures markets indicate that oil prices will remain below $45 per barrel through 2023, reflecting persistently weak demand.

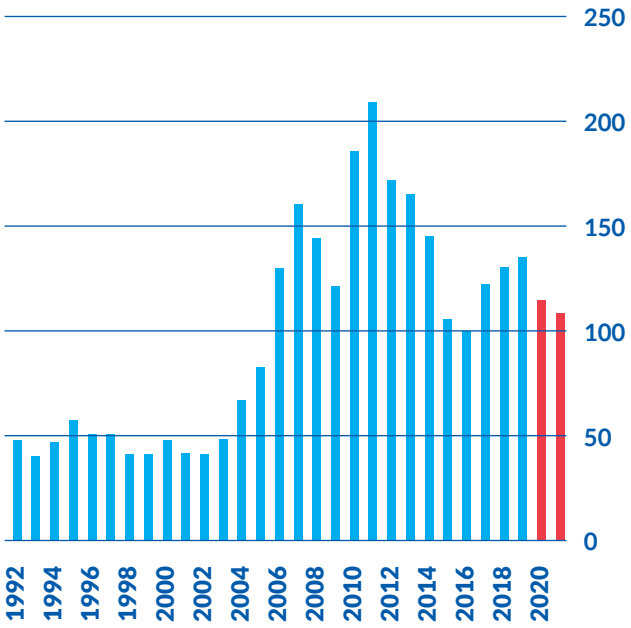
Basic metal prices fell by 15% from mid-January to end of March 2020. Metals prices are expected to decrease by 15% in 2020 and by 5.6% in 2021, compared to 2020.

FIGURES 4 AND 5: **CRUDE OIL PRICE** (US-$ PER BARREL) **AND METAL PRICES** (INDEX 2016=100) **INCLUDING FORECAST**

Crude oil price



Metals price index



Source: IMF World Economic Outlook Database.
Crude oil price = simple average of three spot prices (Dated Brent, West Texas Intermediate, and Dubai Fateh), US$ per barrel.
Metals price index includes copper, aluminum, iron ore, tin, nickel, zinc, lead, and uranium price indices.

Food products and oil seeds are important cargo types in inland navigation. Solid rapeseed is transported by inland vessels to ports, where it is used as raw material for rapeseed oil and biofuel production. Rapeseed oil prices are expected to be 5% lower in 2020 than in 2019. The decrease in prices from 2020 to 2021 should then reach 3%.

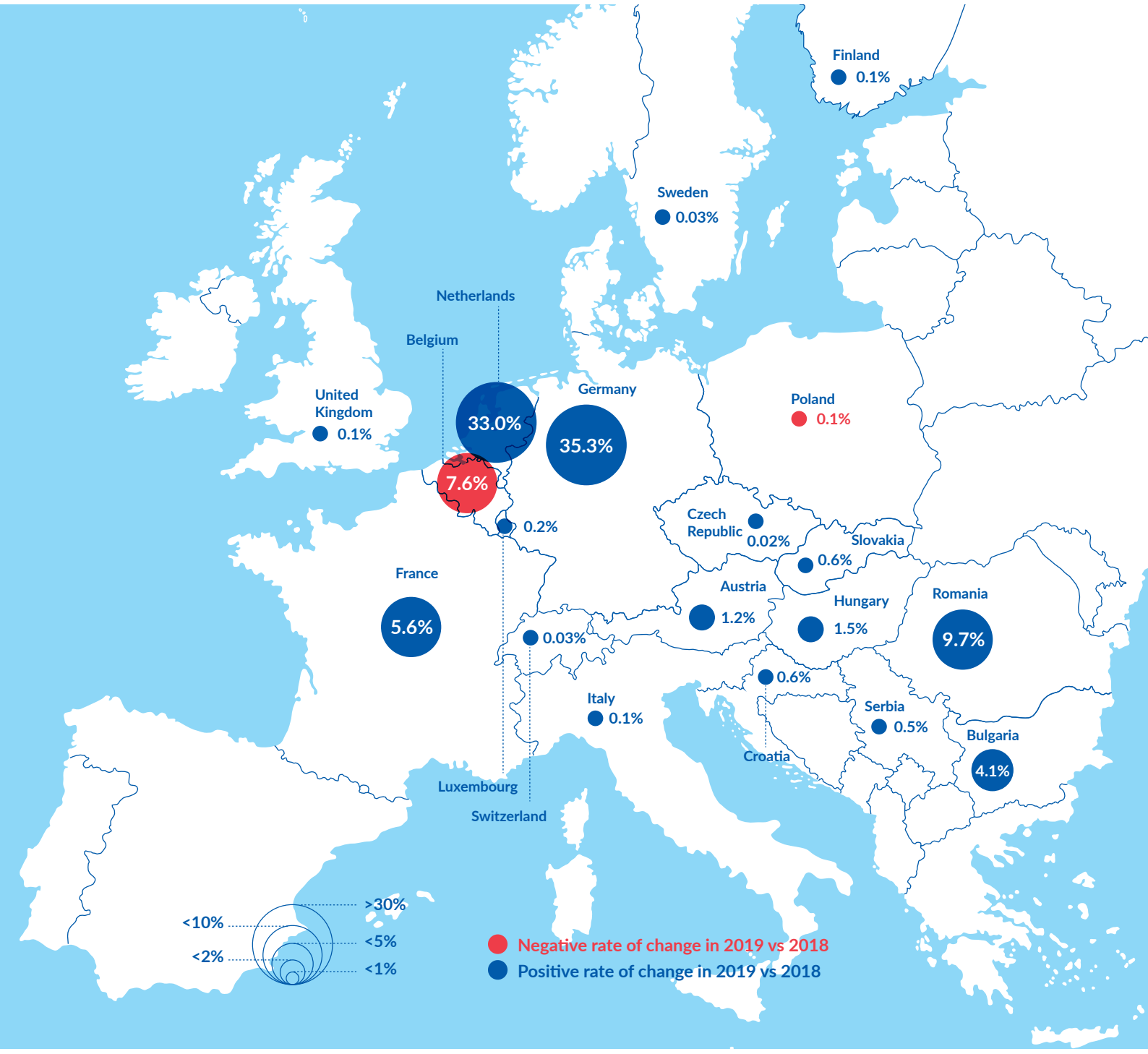
02

FREIGHT TRAFFIC ON INLAND WATERWAYS

- Cargo transport on the traditional Rhine was 6.4% higher in 2019 than the previous year, when low waters had inflicted losses on cargo traffic. But the result in 2019 was still 6.4% lower than in 2017. The recovery could not be completed, partly because of modal share losses and partly because of a weak macroeconomic climate.
- In western Europe, several cargo segments had lower results in 2019 compared to 2018. This was particularly the case for coal and iron ore. Growing segments were chemicals (in all countries) and partly also sands, stones and gravel (in France and Germany), while this segment decreased in the Netherlands and in Belgium due to environmental policies.
- On the Danube, iron ore traffic increased in 2019, as did the transport of agricultural products, foodstuff and feedstuff. Together, the steel and the agribulk segments account for 60% to 70% of transport volumes on the Danube.

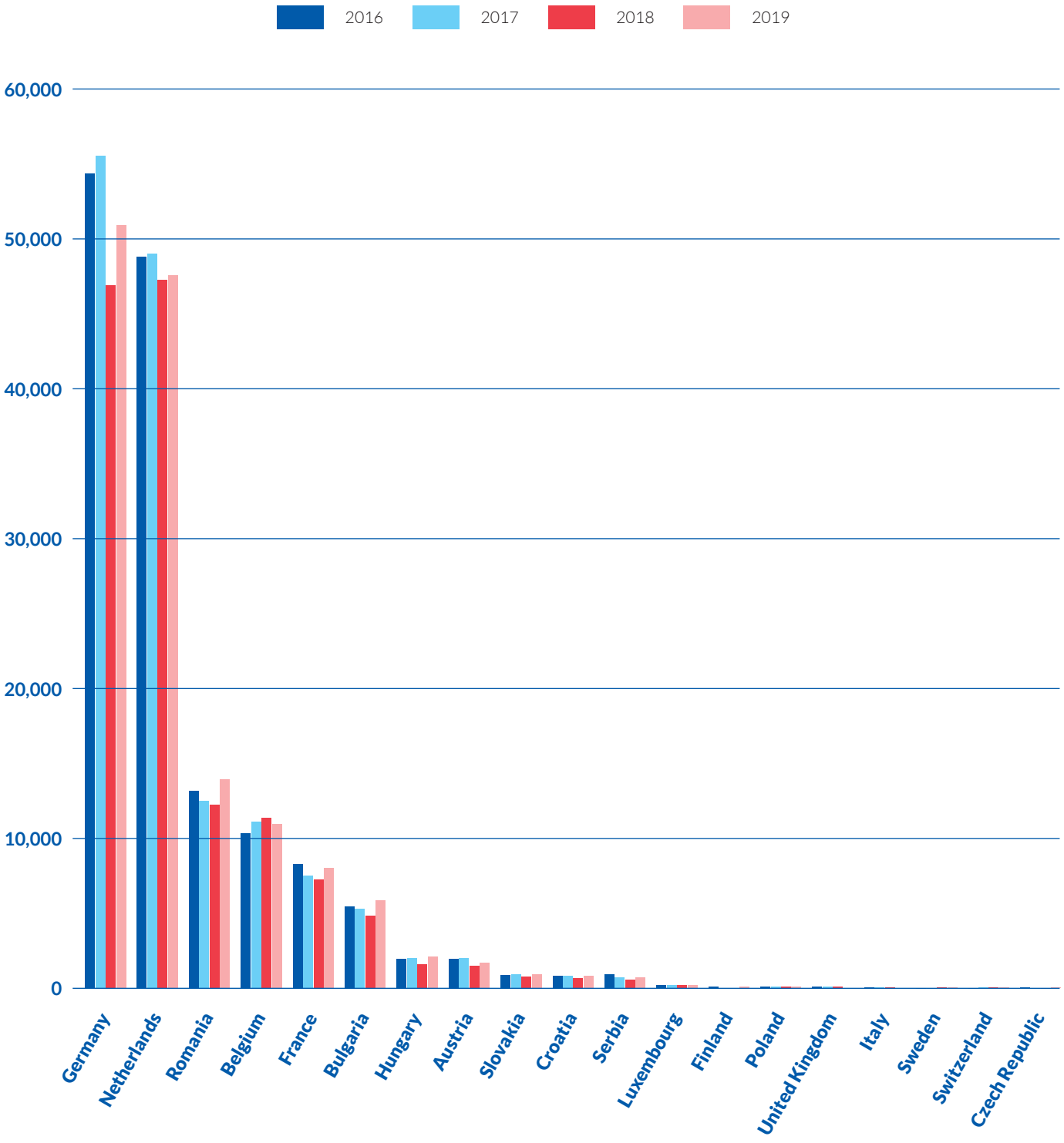
II INLAND NAVIGATION
GOODS TRANSPORT IN EUROPE

SHARE OF THE COUNTRIES' TONNES-KM (TKM) **IN TOTAL TRANSPORT PERFORMANCE IN EUROPE** (SHARE IN %)



Source: Eurostat [iww_go_atygo], OECD (Switzerland), Statistical Office of the Republic of Serbia. The share of IWT performance in Europe in 2019 for Belgium is an estimation based on 2019 data from the Flemish and Walloon Waterway administrations.

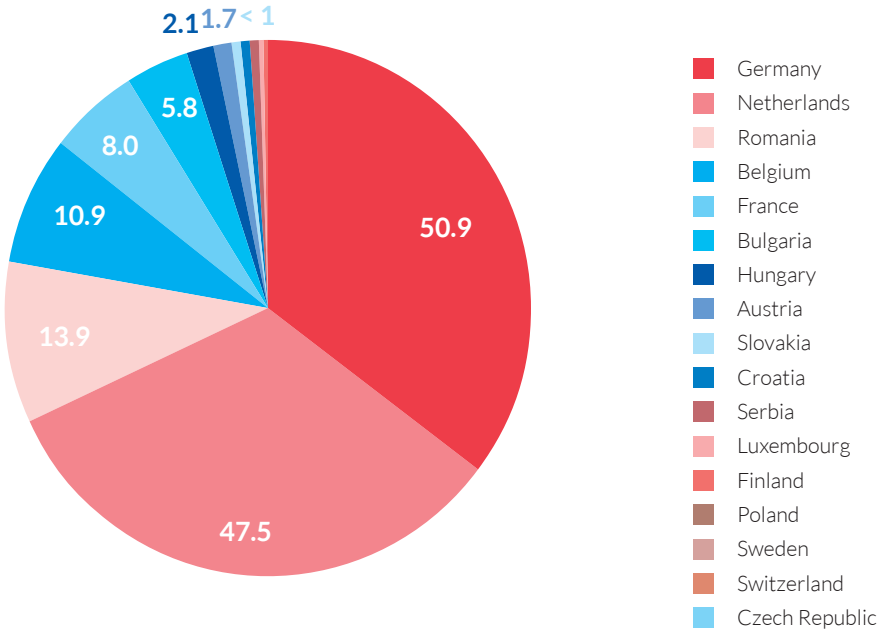
FIGURE 1: **IWT TRANSPORT PERFORMANCE IN 2016, 2017, 2018 AND 2019 IN MAIN EUROPEAN IWT COUNTRIES** (TRANSPORT PERFORMANCE IN MILLION TKM)



Source: Eurostat [iww_go_atygo], Statistical Office of the Republic of Serbia, OECD (Switzerland). The 2019 value for Belgium is an estimation based on 2019 data from the Flemish and Walloon Waterway administrations.

Rhine countries (Belgium, France, Germany, Luxembourg, the Netherlands, Switzerland) accounted for 81.6% of total inland waterway transport performance in the EU-27, plus Switzerland and Serbia. Danube countries had a share of 18.1%, and all other countries taken together represented 0.3%.

FIGURE 2: **YEARLY INLAND WATERWAY TRANSPORT PERFORMANCE IN EUROPEAN COUNTRIES** (IN BILLION TKM IN 2019) *

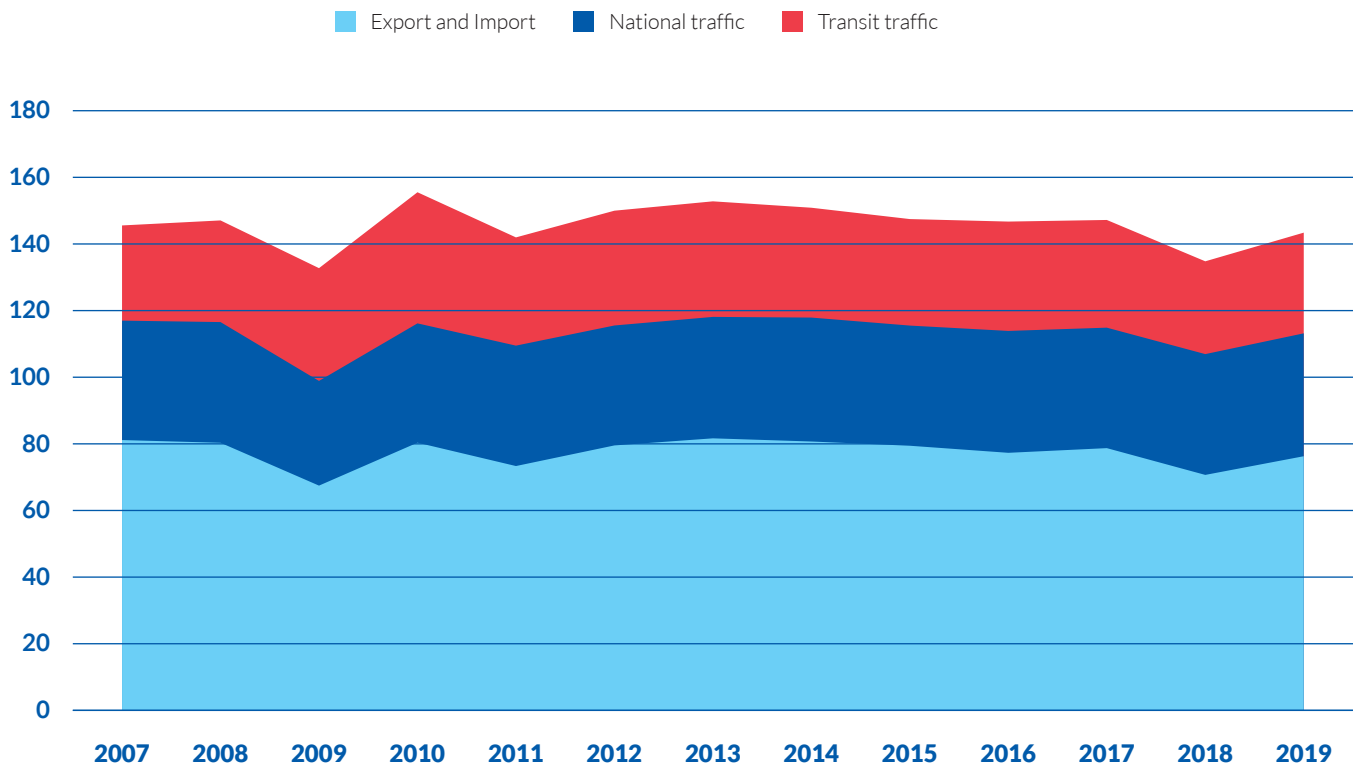


Source: Eurostat [iww_go_atygo] and OECD
**Data for UK and Italy not yet available for 2019. The value for Belgium is an estimation based on 2019 data from the Flemish and Walloon Waterway administrations.*

From the total inland waterway transport performance in Europe in 2019, amounting to around 144 billion TKM, 74.3% represented transport that crossed a border in one way or another – whether it be in the form of export, import or transit traffic. Transit traffic taken separately had a share of 21.1% in 2019, and export and import traffic each had a share of 26.6%.

Inland waterway transport is particularly relevant for certain corridors. Current market characteristics show that for cross-border traffic within the Rhine-Alpine corridor, inland waterways have a modal share of 54%. For the North-Sea Mediterranean corridor, IWW traffic amounts to 35%, 38% for the North-Sea-Baltic corridor and 14% for the Rhine-Danube corridor.

FIGURE 3: **YEARLY INLAND WATERWAY TRANSPORT PERFORMANCE IN EUROPE** (IN BILLION TKM)



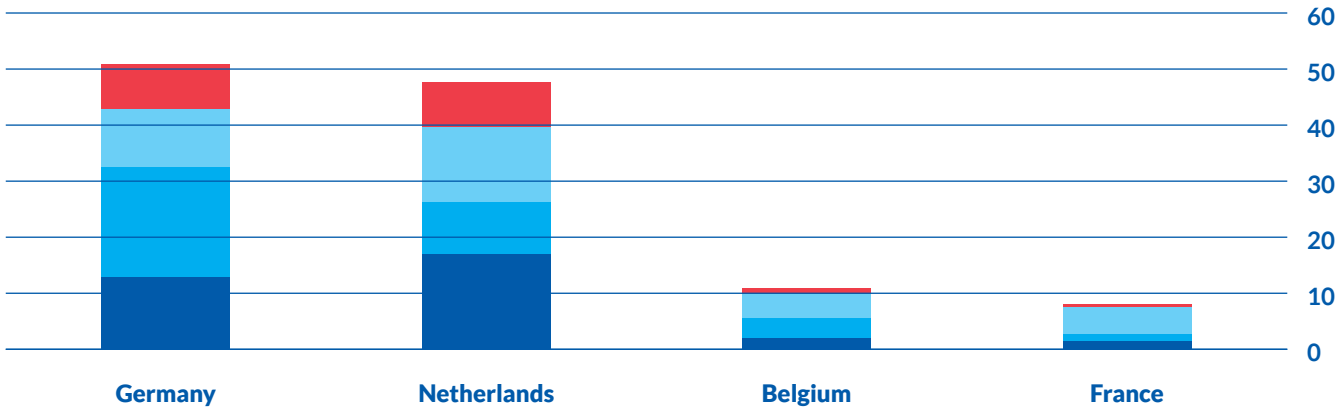
Source: Eurostat [iww_go_atygo]. 2019 values include an estimation for Belgium based on 2019 data from the Flemish and Walloon Waterway administrations.

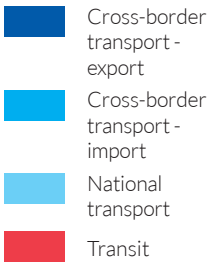
In Rhine countries, national transport has a share of 20% in Germany, 28% in the Netherlands, 40% in Belgium and 60% in France. The project of the Seine-Nord Europe Canal, which will link the French Seine-Oise basin with the Belgian inland waterway network for vessels up to 185 metres long and a loading capacity of up to 4,400 tonnes is supposed, in the future, to increase the share of international traffic in France, as well as in Belgium.[7]

In 2019, total cross-border transport performance (export and import) of the Netherlands had the following distribution: 54% was loaded or unloaded in Germany, 40% in Belgium, 4% in France, and only 2% in other countries.[8]

[7] *According to the current planning schedule, the canal should be open from December 2028 onwards. See: https://canal-seine-nord-europe.fr/Calendrier*
[8] *Source: CBS, https://opendata.cbs.nl/statline/#/CBS/nl/dataset/82515NED/table?ts=1594930953814*

FIGURE 4: **INLAND WATERWAY TRANSPORT PERFORMANCE IN RHINE COUNTRIES ACCORDING TO TYPE OF TRANSPORT IN 2019** (IN BILLION TKM)

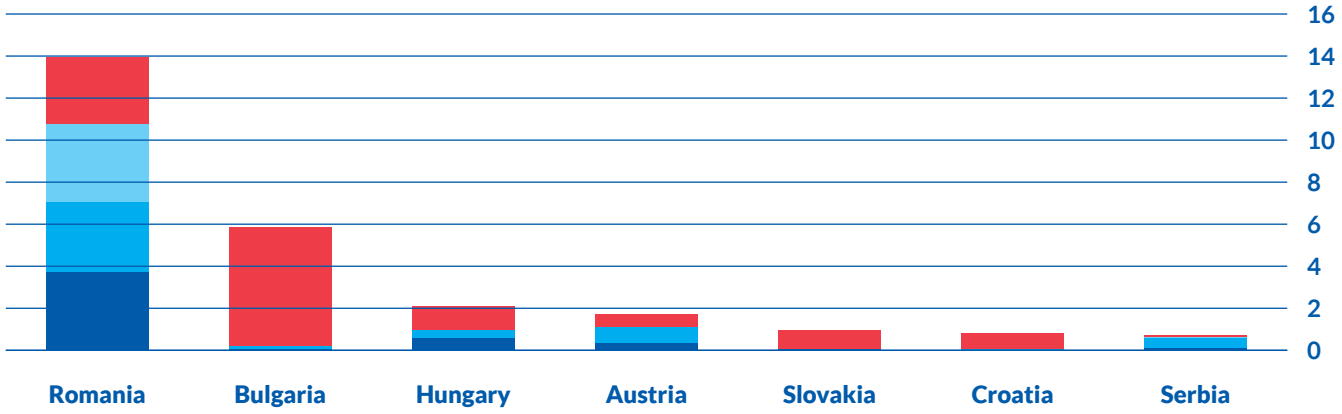




Source: Eurostat [iww_go_atygo]. The values for Belgium are partly estimated (see notes above).

Among Danube countries, Romania has almost equally high shares of national traffic (27%), export traffic (27%), import traffic (24%) and transit traffic (23%). In most other Danube countries, national traffic has a rather low share, while transit traffic's share is very high.

FIGURE 5: **INLAND WATERWAY TRANSPORT PERFORMANCE IN DANUBE COUNTRIES ACCORDING TO TYPE OF TRANSPORT IN 2019** (IN BILLION TKM)



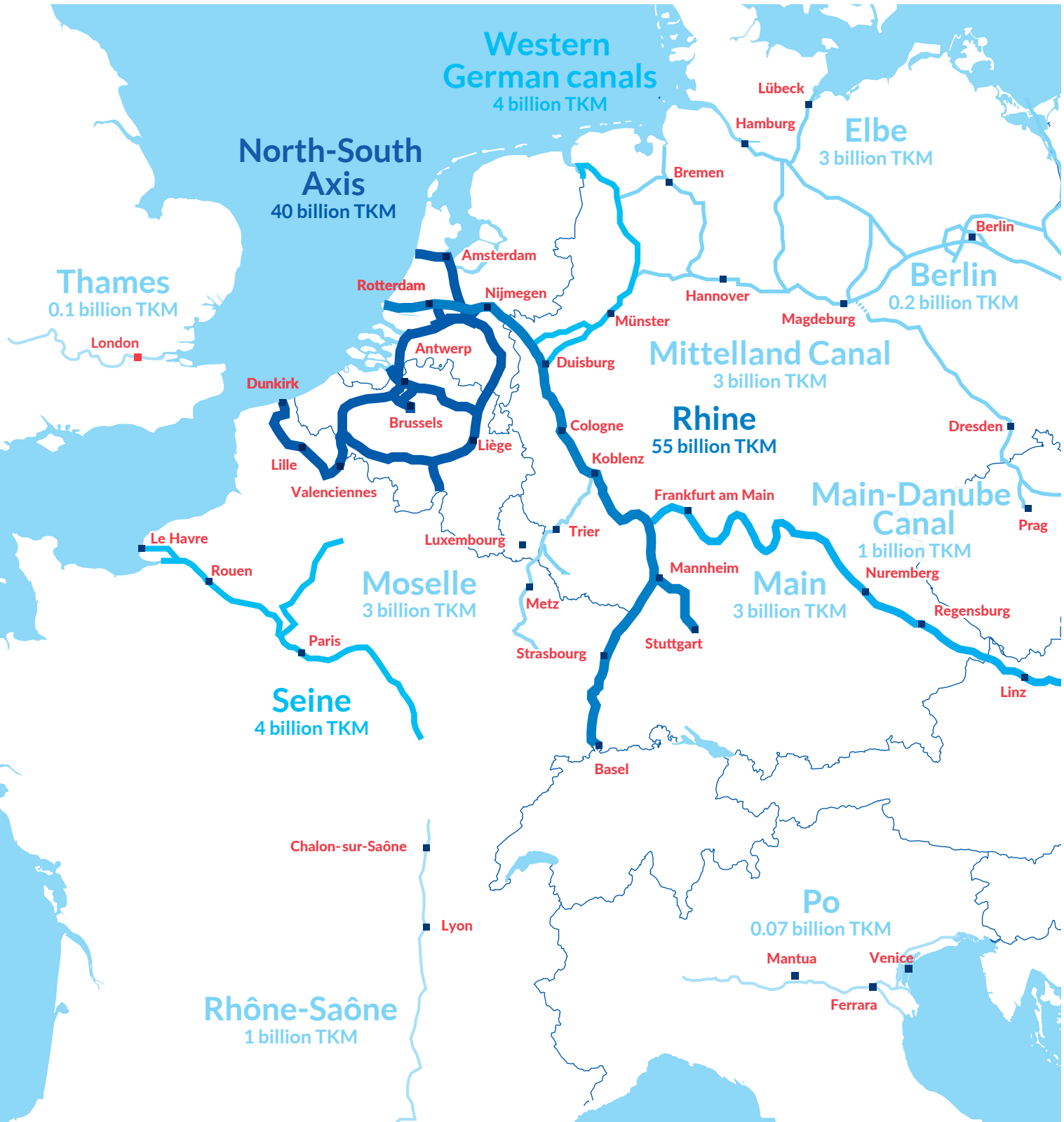
Source: Eurostat [iww_go_atygo], Statistical Office of the Republic of Serbia

Transit traffic reaches 56% in Hungary, 93% in Slovakia, 94% in Croatia and 96% in Bulgaria. A combination of geographical and economic factors can explain this pattern. The relatively small stretch along the Danube for countries such as Croatia and Slovakia favours a high share of transit traffic. Countries where steel industry makes use of IWT have a higher share of import traffic. This is the case for Austria (import traffic share 45%) and Serbia (import traffic share 61%).


LIVERPOOL
SHANGHAI 8 885 NM

INLAND NAVIGATION

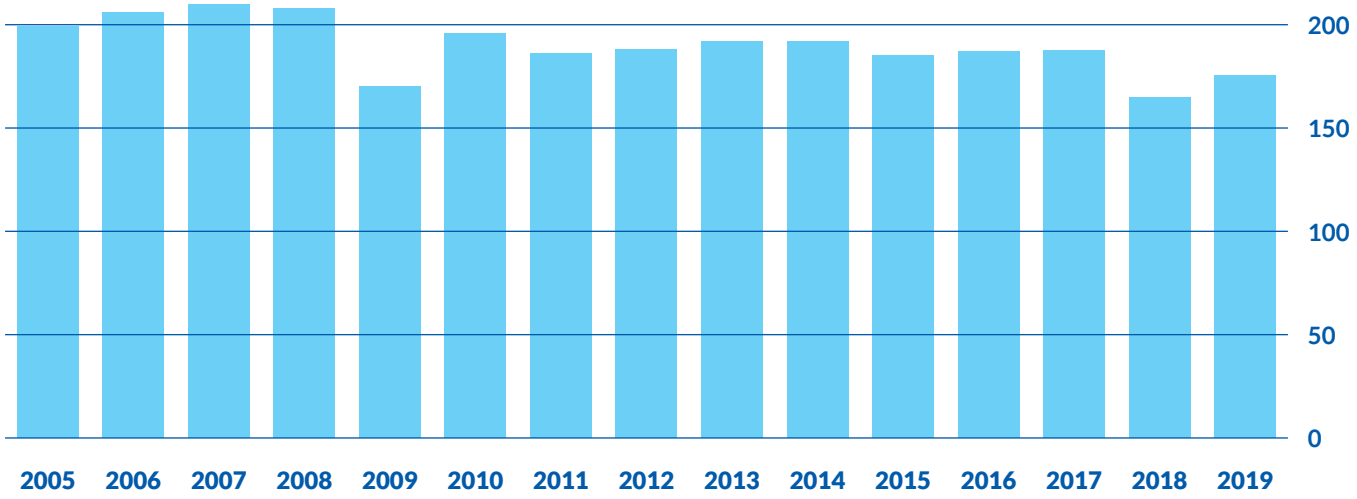
GOODS TRANSPORT IN MAIN EUROPEAN RIVER BASINS



TRANSPORT PERFORMANCE IN MAIN EUROPEAN RIVER BASINS (IN BILLION TKM)

IWW TRANSPORT PER TYPE OF GOODS IN THE RHINE BASIN AND IN WESTERN EUROPE

FIGURE 6: **TRADITIONAL RHINE** (IN MILLION TONNES)



Source: CCNR analysis based on Destatis

Traditional Rhine transport (from Basel to the German-Dutch border) amounted to 175.6 million tonnes in 2019, which is 6.4% higher than in 2018, but 6.4% less than in 2017. Goods transport has not fully recovered from low waters in 2018, but the weaker macroeconomic framework conditions also played a role.

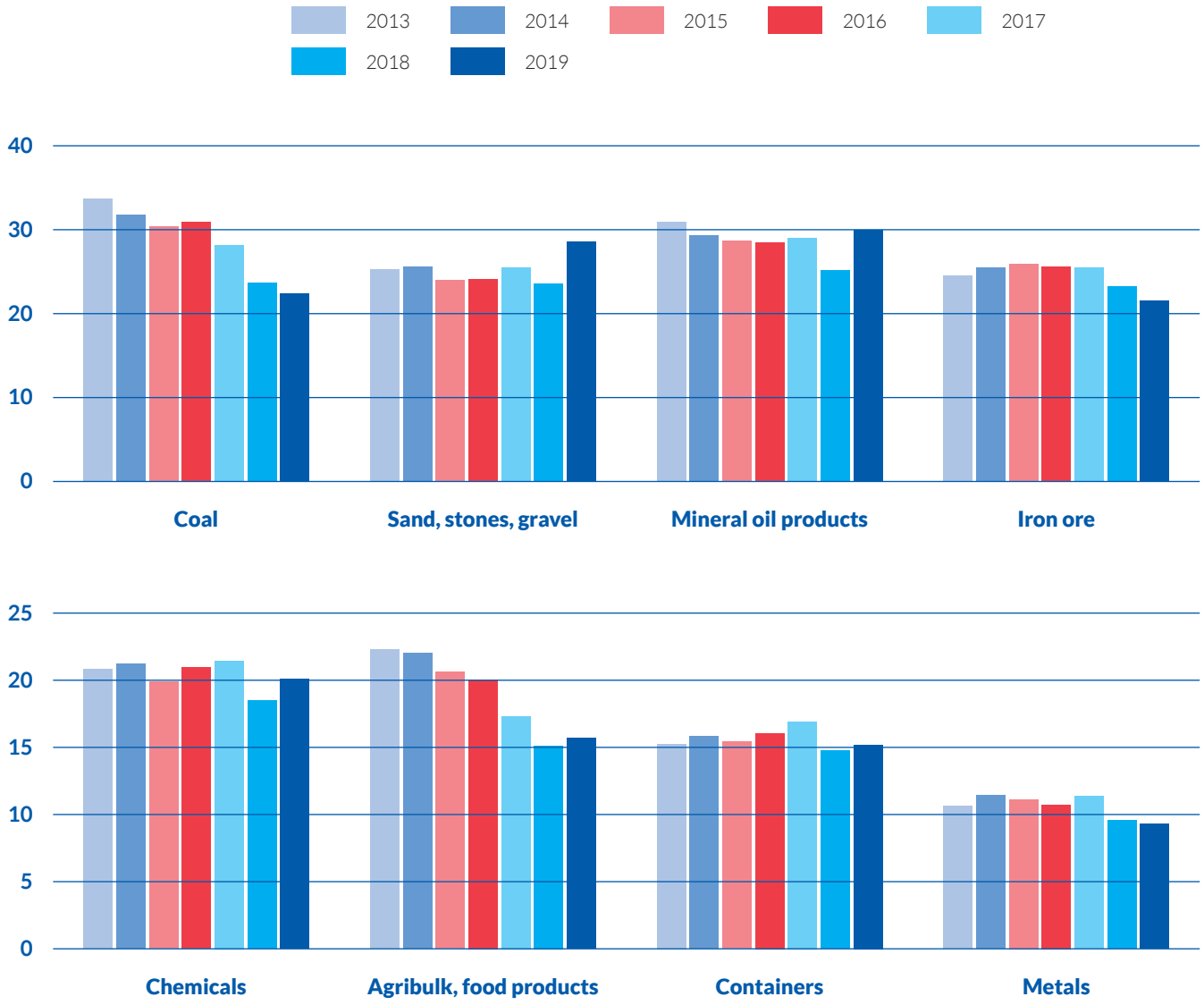
Mineral oil products, as well as sands, stones and building materials had a 20% higher transport volume in 2019 than in 2018. Even when compared to 2017, mineral oil product volumes were 3% higher, and volumes of sands, stones, gravel surpassed the 2017 level by 12%.

Coal transport was 5% lower than in 2018, and even 20% below its level of 2017. The decline in coal transport is structural, as coal is being phased out of the energy sector in Germany. This will be addressed in more detail in the "Outlook" chapter. Iron ore transport (-7% compared to 2018 and -15% compared to 2017) came under pressure from a weakening of steel production in Germany, in the wake of the factors explained in chapter 1 (tariffs on steel, automobiles).

In 2020 a further decline of iron ore transport is expected, as German steel production was 10.4% lower in March 2020, than in March 2019.[9] A similar reduction of iron ore transport on the Rhine is expected for 2020 if this strength of reduction in steel production will continue throughout the year.

[9] *Source: German Steel Federation*

FIGURES 7 AND 8: **GOODS TRANSPORTED ON THE TRADITIONAL RHINE BY TYPE OF GOODS** (IN MILLION TONNES) *



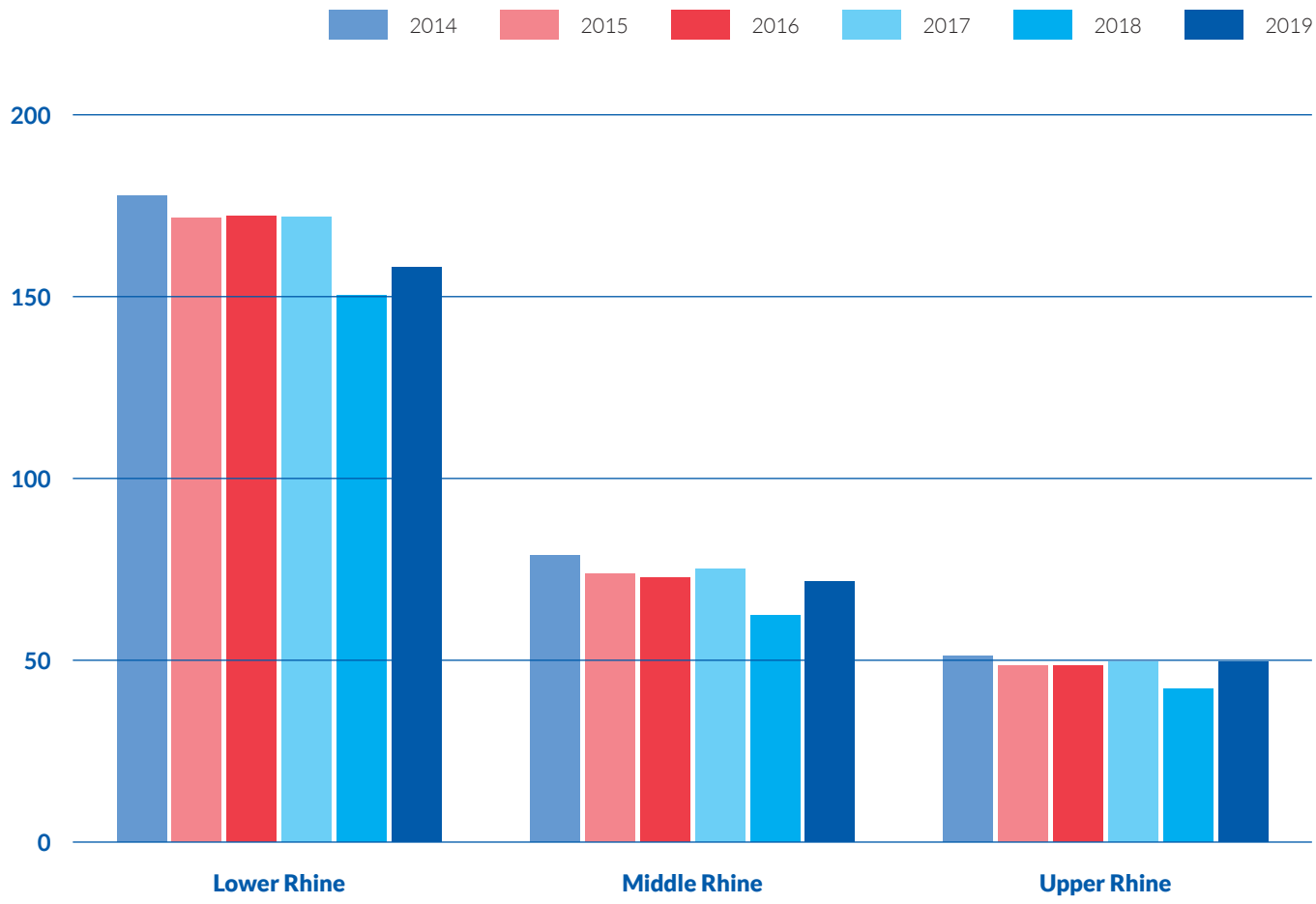
Source: CCNR analysis based on Destatis
** for containers: net-weight*
Traditional Rhine = Rhine from Basel to German-Dutch border

Chemical transport recovered better from the low water period of 2018 as it reached its usual level during the first half year 2019. This was even more remarkable as chemical production decreased during this time. In the second half of 2019, transport volumes started to decrease somewhat. However, in the first quarter 2020, in contrast to steel production, German chemical production barely decreased.

The largest gap is visible for the Lower Rhine, where transport volumes in 2019 were still 8% below the 2017 level. The Upper Rhine has recovered better, as its 2019 transport volume was practically at the same level as in 2017. One explanation for this difference is that iron ore and coal, which decreased in 2019, had a share of 28% in transport volumes on the Lower Rhine, compared to only 9% on the Middle and 8% on the Upper Rhine.


Netherlands
Rotterdam
Germany
Duisburg
LOWER RHINE
Cologne
Belgium
Bonn
Koblenz
MIDDLE RHINE
Kaub
Main
Mayence
Luxembourg
Moselle
Mannheim
France
Neckar
Main-Danube
Canal
Danube
UPPER RHINE
Strasbourg
Basel
Switzerland

FIGURE 9: **RHINE TRANSPORT ACCORDING TO RHINE STRETCH** (IN MILLION TONNES)



Source: CCNR analysis based on Destatis

TABLE 1: **VARIATION IN TRANSPORT VOLUME ON THE TRADITIONAL RHINE AND PER RHINE STRETCH**

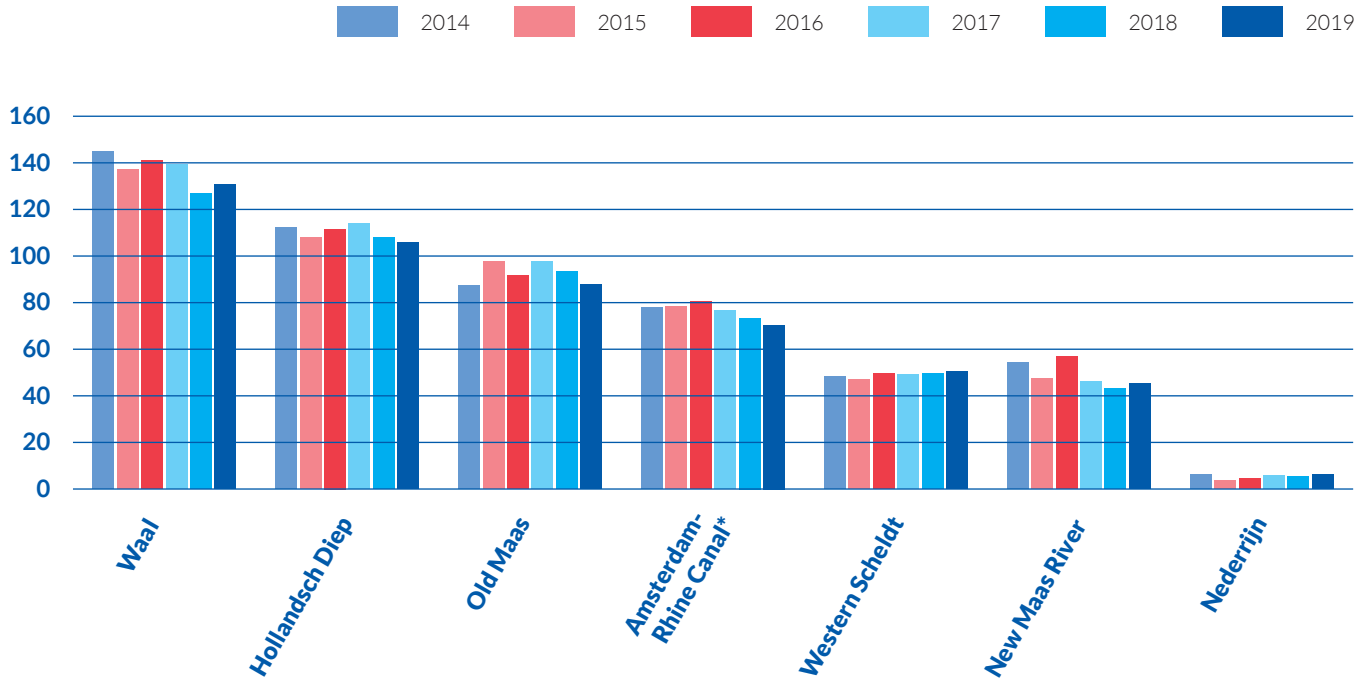
	Variation 2019/2018	Variation 2019/2017
Traditional Rhine in total	+6.4%	-6.4%
Lower Rhine	+5.1%	-8.0%
Middle Rhine	+14.9%	-4.7%
Upper Rhine	+17.6%	-0.2%

Source: CCNR based on Destatis

Inland waterways in the Netherlands

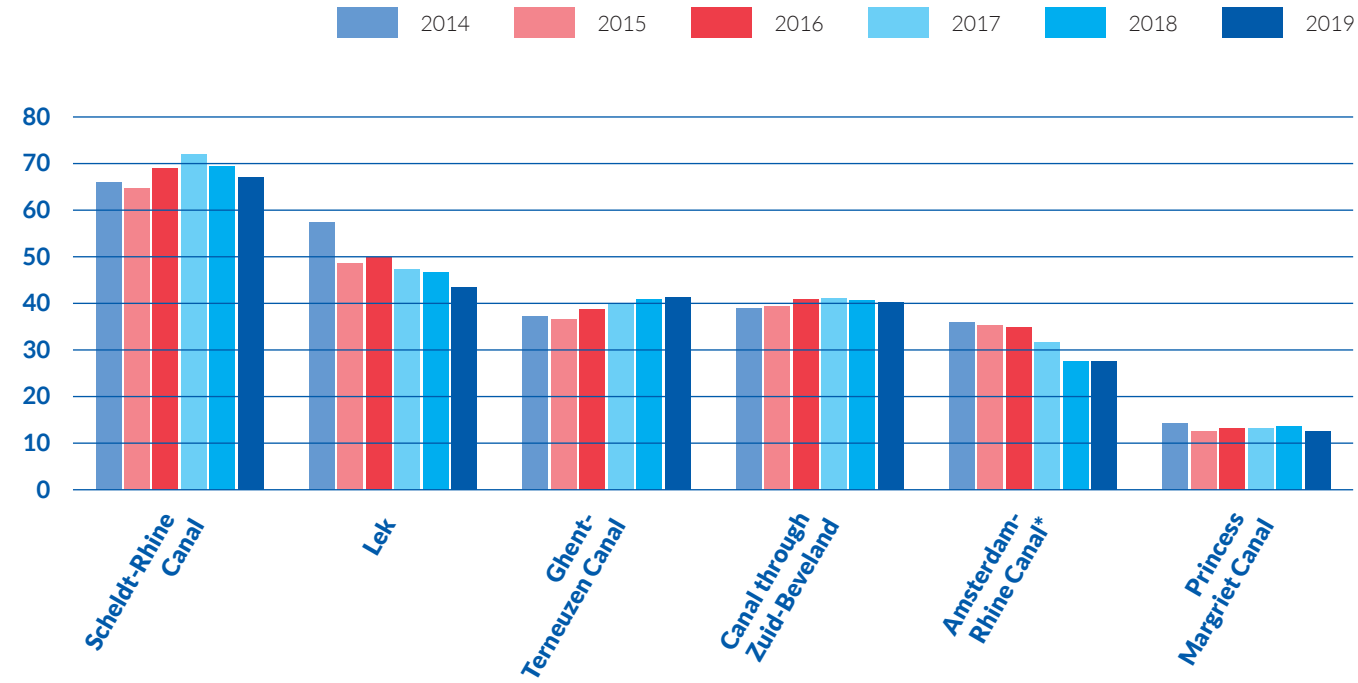
In the Netherlands, the waterways forming the Dutch part of the Rhine are Nederrijn (northern Rhine branch), Waal (southern Rhine branch) and Lek (northern Rhine branch). Many other Dutch waterways are linked to these Rhine branches, such as the Amsterdam-Rhine Canal.

FIGURE 10: **THE NETHERLANDS – TRANSPORT VOLUME PER WATERWAY** (MILLION TONNES)



Sources: Rijkswaterstaat and analysis Panteia
** Stretch north of the river Lek*

FIGURE 11: **THE NETHERLANDS – TRANSPORT VOLUME PER WATERWAY** (MILLION TONNES)

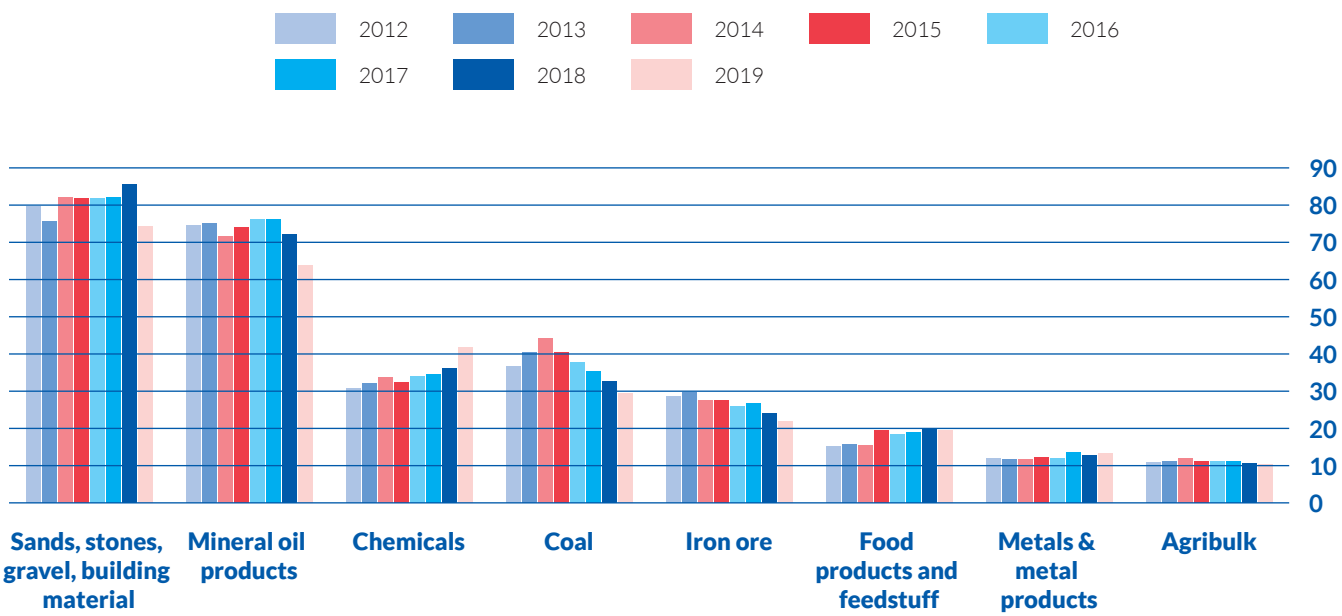


Sources: Rijkswaterstaat and analysis Panteia
** Amsterdam Rijnkanaal Betuwepand*

Iron ore and metal wastes are mainly transported on Waal and Old Maas, and they registered -8%, similar to the -7% on the traditional Rhine. According to long-term data (from 1994 onwards), coal and iron ore transports follow a negative trend in the Netherlands, but metals are on an upward trend. Oher segments with a long-term upward trend are chemicals, sands, stones and building materials, agricultural and food products.

Data for the entire Dutch inland waterway network show that chemicals experienced an accelerated increase in 2019 (+16.2%). Volumes of sands, stones and gravel fell in 2019, due to national environmental regulations which aimed at limiting nitrogen emissions. This affected the construction activity in the Netherlands, with the result of a decrease in related transport volumes. As in Belgium, new standards on perfluorinated compounds also influenced the volumes.

FIGURE 12: **IWW GOODS TRANSPORT ON ALL DUTCH WATERWAYS** (IN MILLION TONNES)



Sources: Eurostat [iww_go_atygo] and CBS

Inland waterways in Germany

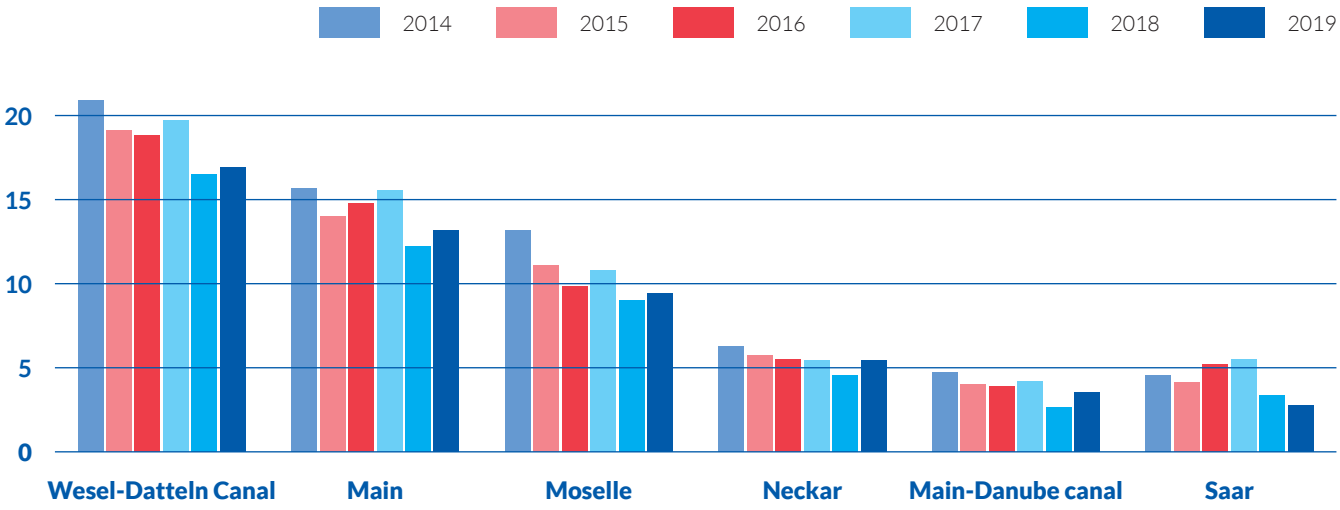
The following two figures show annual transport volumes for important German inland waterways other than the Rhine. The source of the data is the German waterway and shipping administration, except for one case (Wesel-Datteln Canal), where the source is the German Statistical Office.[10]

On the Main, the largest segment is sands, stones, gravel. They lost only slightly (-1%) compared to 2018. Mineral oil products registered a plus of 19% which can be explained by the replenishment of oil reserves in response to the previous low water period in 2018.

On the Moselle, agribulk traffic is the largest segment and it benefitted from better harvest results, reaching a plus of 17%. Grain is mostly transported upstream on the Moselle from France to Germany. Steel traffic gained 11%, but coal lost around 25% of its volume as was the case for iron ore. On the Neckar, sands, stones and gravel gained 6.6%, but coal traffic also lost here (-32.6%).

[10] *In 2019, charges for navigating on German inland waterways were abolished. This also led to a reduced statistical counting of transport volumes at locks. For most of the locks, 2019 figures were available, but not for all of them.*

FIGURE 13: **GERMANY – WATERWAYS IN WESTERN AND SOUTHERN PARTS OF THE COUNTRY** (MILLION TONNES)

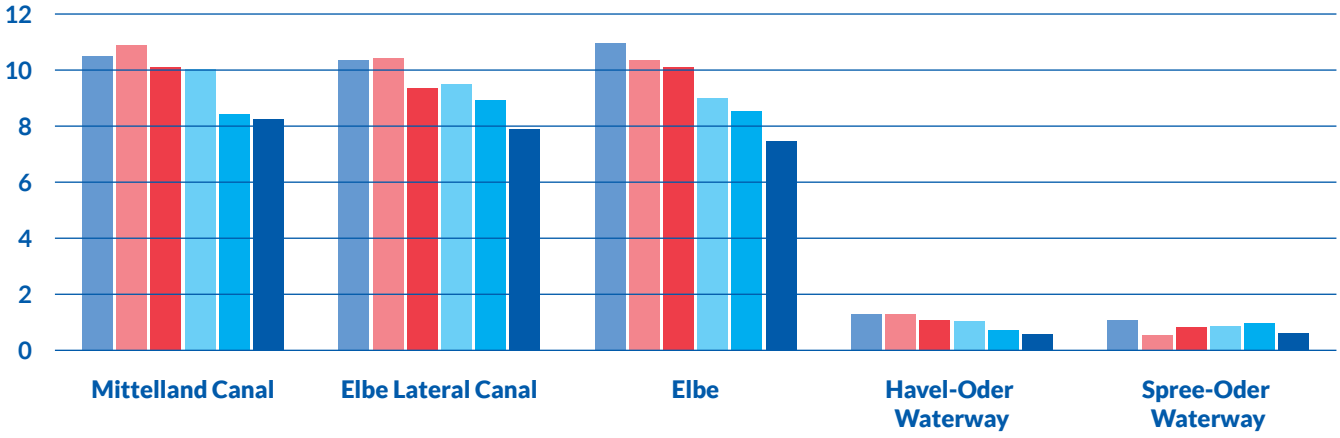


Sources: German waterway and shipping administration except for Wesel-Datteln Canal (data from Destatis). Main: lock of Mainz-Kostheim; Moselle: lock of Koblenz; Neckar: lock of Mannheim-Feudenheim.

On the Elbe, mineral oil products form the largest segment but volumes fell by 8%, coal traffic by even 28%. Other cargo segments (agribulk, sands, stones and gravel) also recorded reductions, with the only exception being container transport (see part on containers in this chapter).

The results on the Mittelland Canal were mixed. The positive evolution was an increase of containers (see part on containers) and of sands, stones and gravel by 21%. Mineral oil products decreased (-12%) as did agribulk (-9%).

FIGURE 14: **GERMANY – WATERWAYS IN THE NORTHERN AND EASTERN PARTS OF THE COUNTRY** (MILLION TONNES)

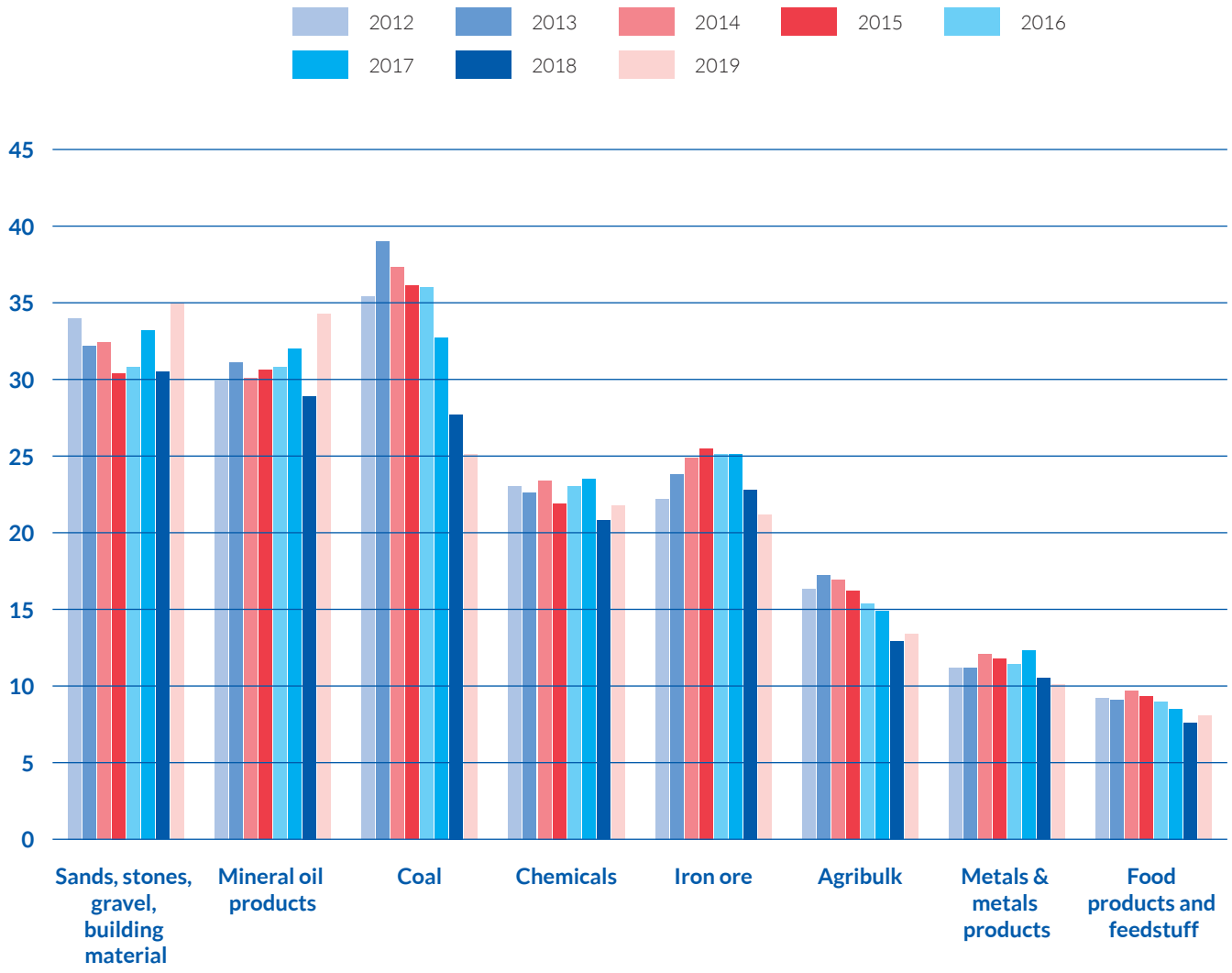


Sources: German waterway and shipping administration. Mittelland Canal: lock of Sülfeld; Elbe Lateral canal: lock of Uelzen; Elbe: lock of Geesthacht near Hamburg; Havel-Oder waterway: Niederfinow Boat Lift; Spree-Oder waterway: lock of Berlin-Charlottenburg.


Denmark
Kiel
Brunsbüttel
Rostock
Lübeck
Hamburg
Bremerhaven
Ems
Netherlands
Küsten Canal
Bremen
Elbe Lateral Canal
Elbe
Lower Havel waterway
Havel-Oder waterway
Poland
Oder
Dortmund - Ems - Canal
Weser
Mittelland Canal
Hannover
Berlin
Spree-Oder waterway
Odra (Oder)
Wesel-Datteln Canal
Osnabrück
Braunschweig
Rothenseer connecting Canal
Magdeburg
Münster
Datteln - Hamm Canal
Weser
Hamm
Dortmund
Rhine-Herne Canal
Duisburg
Düsseldorf
Elbe
Dresden
Köln
Bonn
Rhine
Belgium
Labe (Elbe)
Koblenz
Frankfurt (Main)
Main
Moselle
Mainz
Main
Würzburg
Luxembourg
Trier
Mannheim
Main - Danube Canal
Nürnberg
Czech Republic
Saar
Neckar
Saarbrücken
Heilbronn
Karlsruhe
Regensburg
Danube
Stuttgart
Danube
Strasbourg
Kehl
Neckar
Passau
Linz
France
Rhine
München
Freiburg
Austria
Mulhouse
Basel
Switzerland
Rhine

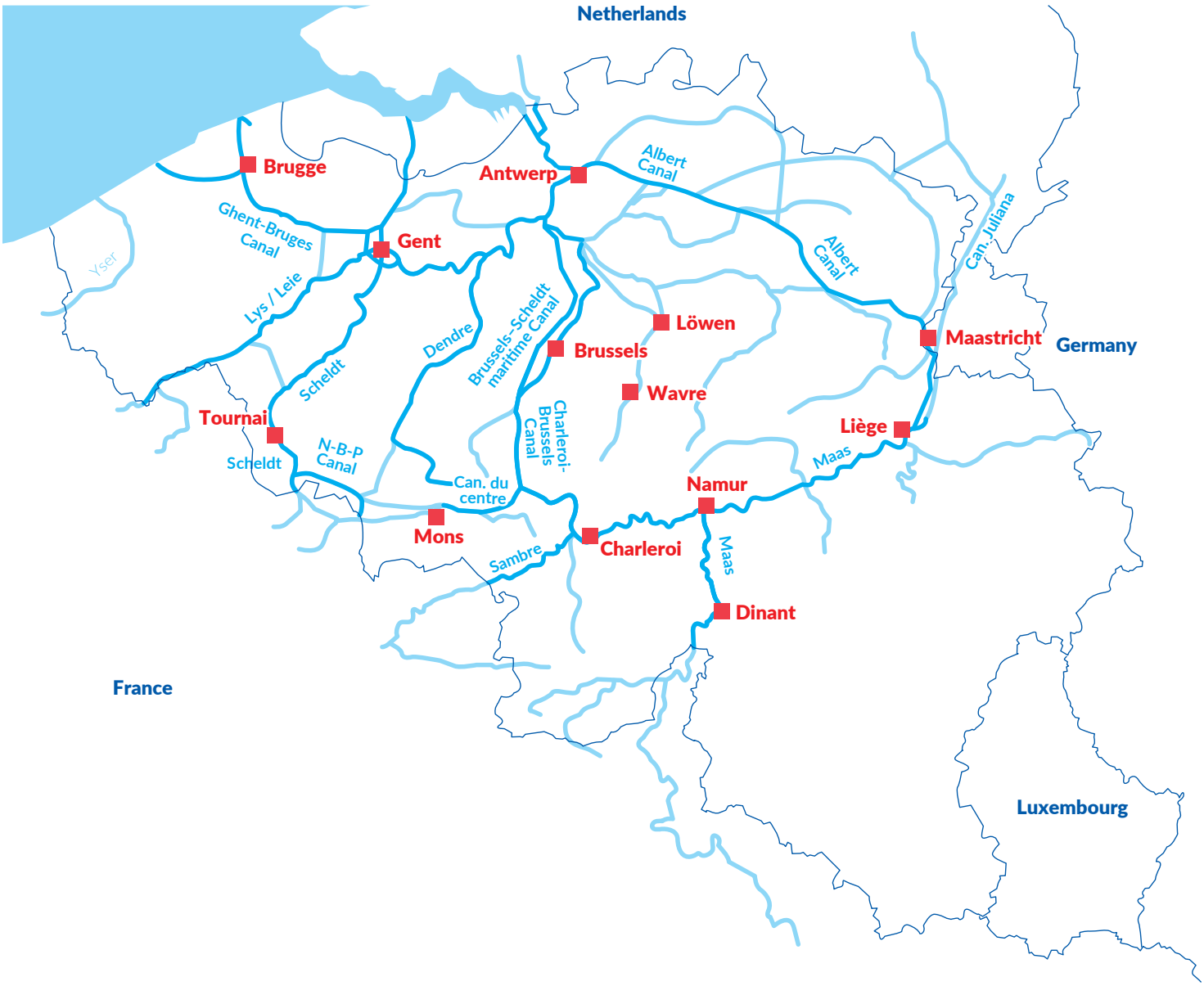
The results for the entire German waterway network show an increase for sands, stones, gravel (+15%), mineral oil products (+19%) and chemicals (+5%). But the declining coal (-9%) and iron ore transport (-7%) strongly affected total volumes.

FIGURE 15: **IWW GOODS TRANSPORT ON GERMAN WATERWAYS** (IN MILLION TONNES)



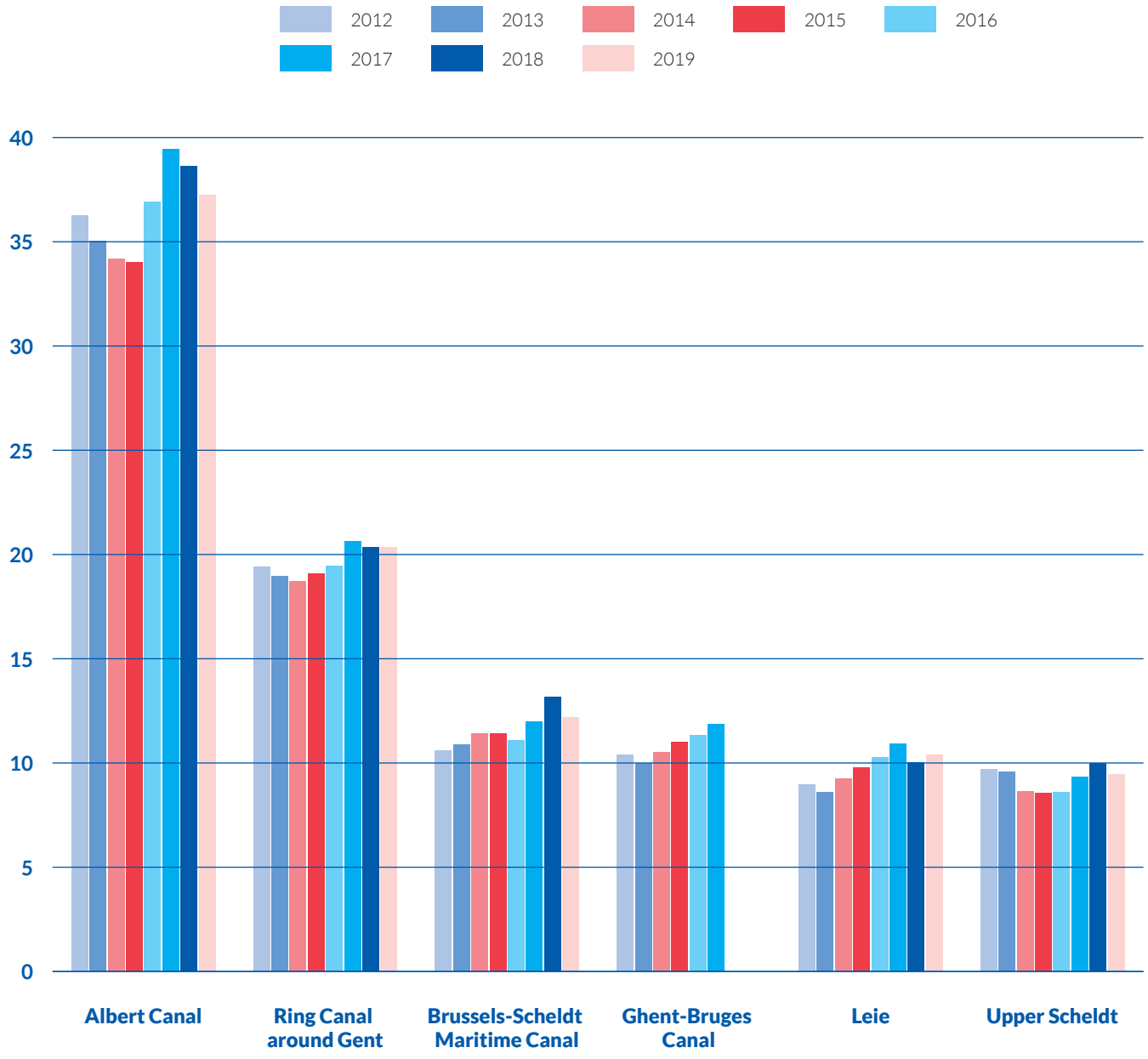
Source: Destatis

Inland waterways in Belgium



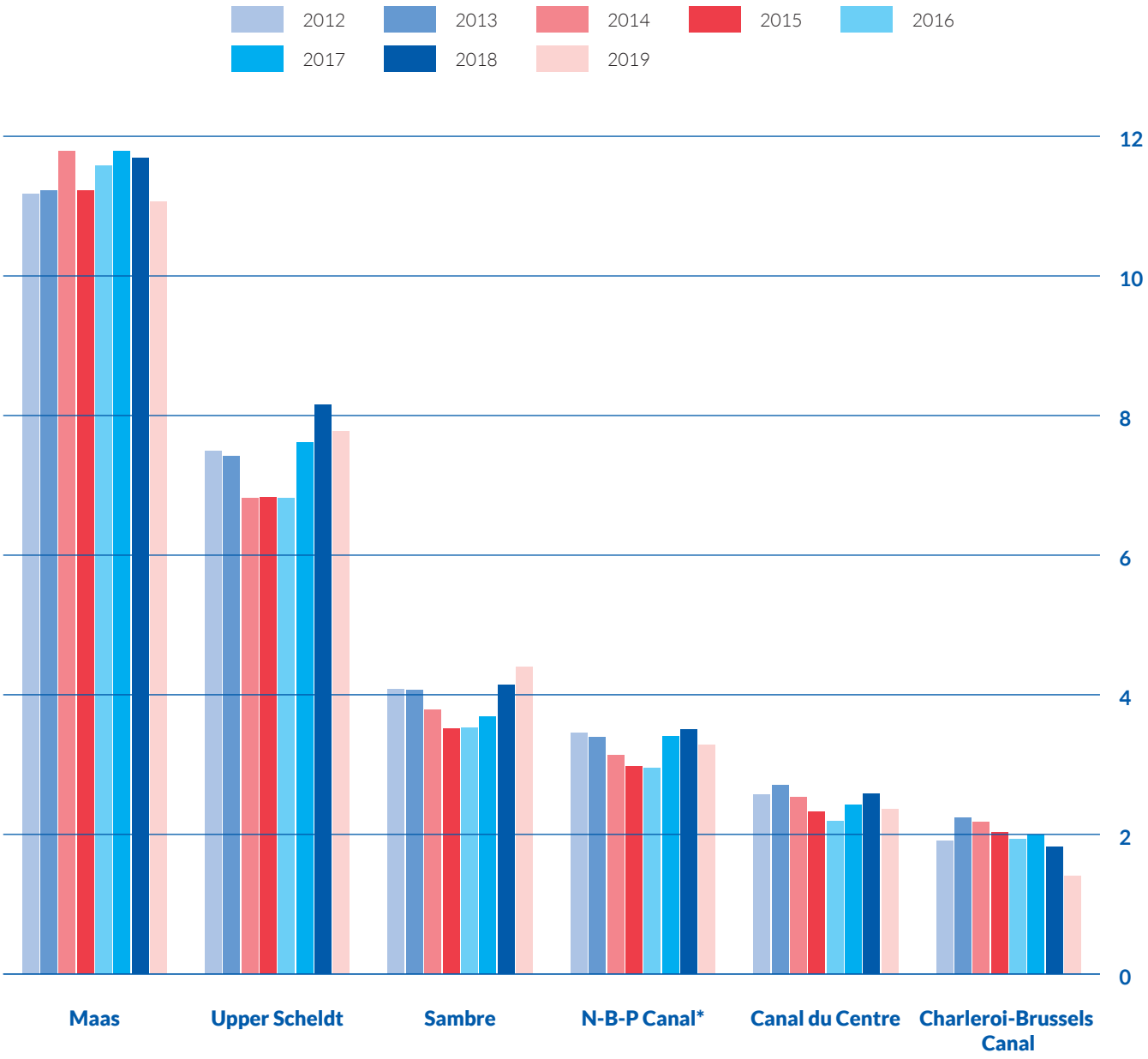
The majority of rivers and canals in Belgium recorded far and wide a reduction of transport volumes in 2019. Transport on the total Flemish Waterway network decreased by 2.6% (to 70.2 mio. t). An important reason was that transport of construction materials (the largest segment in Belgium) was disrupted by new standards for perfluorinated compounds.

FIGURE 16: **BELGIUM-FLANDERS – GOODS TRANSPORT PER RIVER AND CANAL**
(IN MILLION TONNES)



Source: De Vlaamse Waterweg

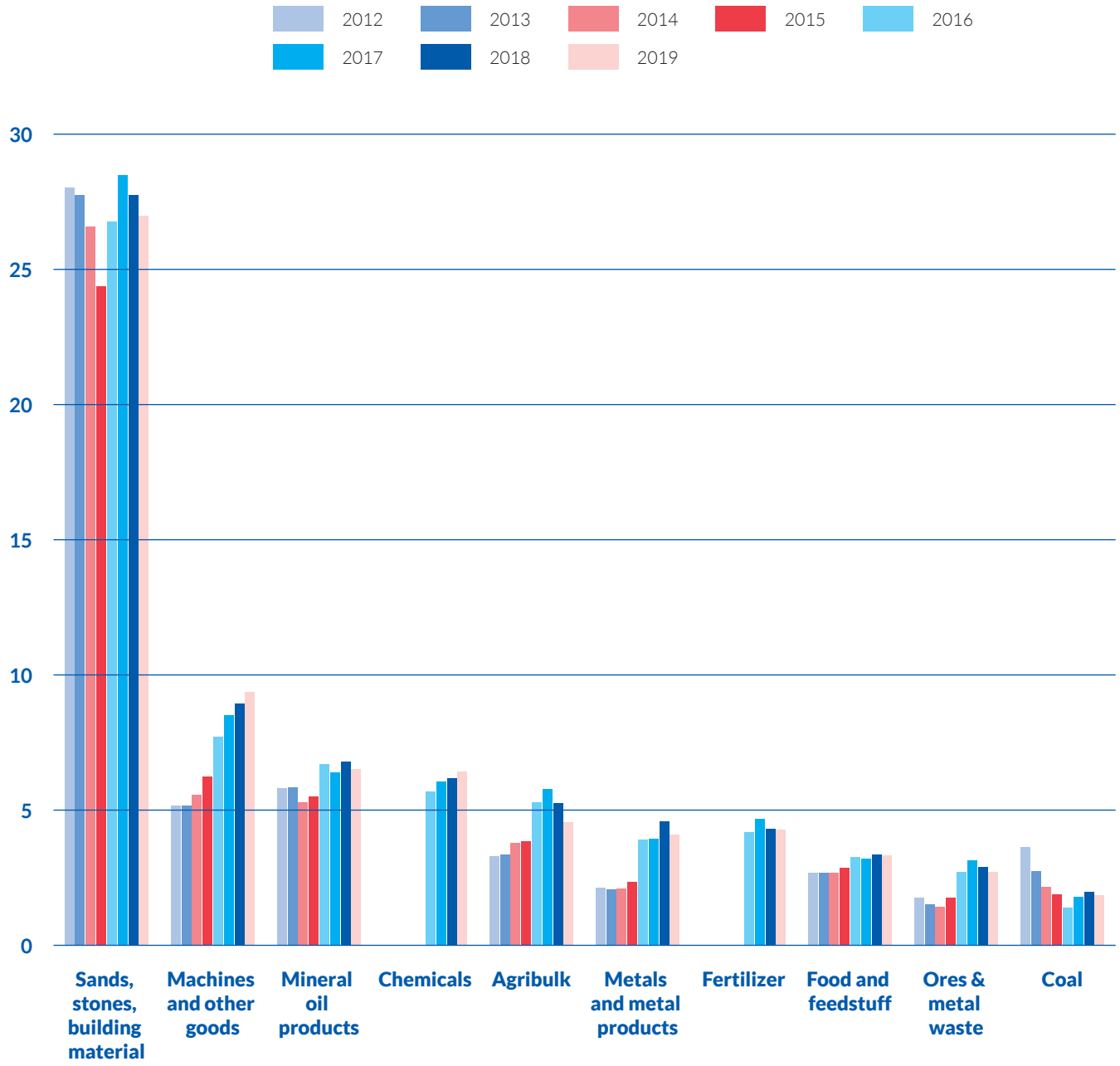
FIGURE 17: **BELGIUM-WALLONIA – GOODS TRANSPORT PER RIVER AND CANAL** (IN MILLION TONNES)



Source: Direction générale opérationnelle de la Mobilité et des Voies hydrauliques
** N-B-P Canal = Nimy-Blaton-Péronnes Canal*

Vessels in Wallonia suffered from dry hot weather in 2019 which led to draught restrictions on some canals. The volumes transported on the Walloon inland waterway network amounted to 39.13 mio. t, a decrease of 5.8% compared to 2018 and -3.7% compared to 2017. The waterway administration *Service Public de Wallonie* (SPW) reported that sectors such as metallurgy and quarries chose other modes of transport because of the drought conditions.

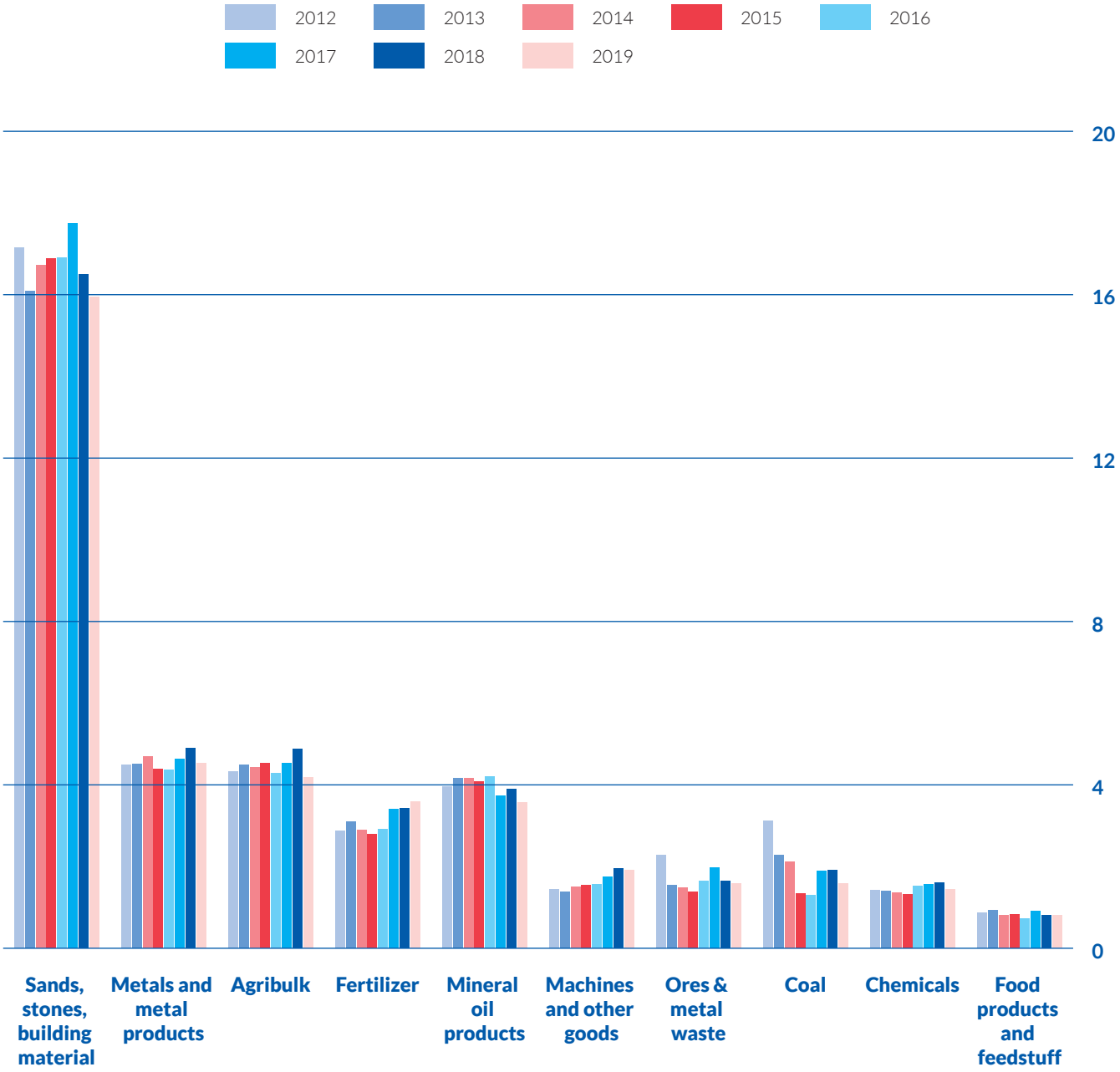
FIGURE 18: **FLANDERS - INLAND WATERWAY GOODS TRANSPORT PER GOODS SEGMENT** (MILLION TONNES) *



Source: De Vlaamse Waterweg
**Data for chemicals and fertilizers were not available according to the same definition for the years before 2016.*

Around 27 mio. t of sands, stones and gravel were transported In Flanders, compared to 16 mio. t in Wallonia. In both parts of Belgium, this largest segment had 3% less cargo volume in 2019. The cargo segment with the strongest growth in Flanders is that of machines and other goods, with 9.38 mio. t in 2019.

FIGURE 19: **WALLONIA - INLAND WATERWAY GOODS TRANSPORT PER GOODS SEGMENT**
(MILLION TONNES)



Source: Direction générale opérationnelle de la Mobilité et des Voies hydrauliques

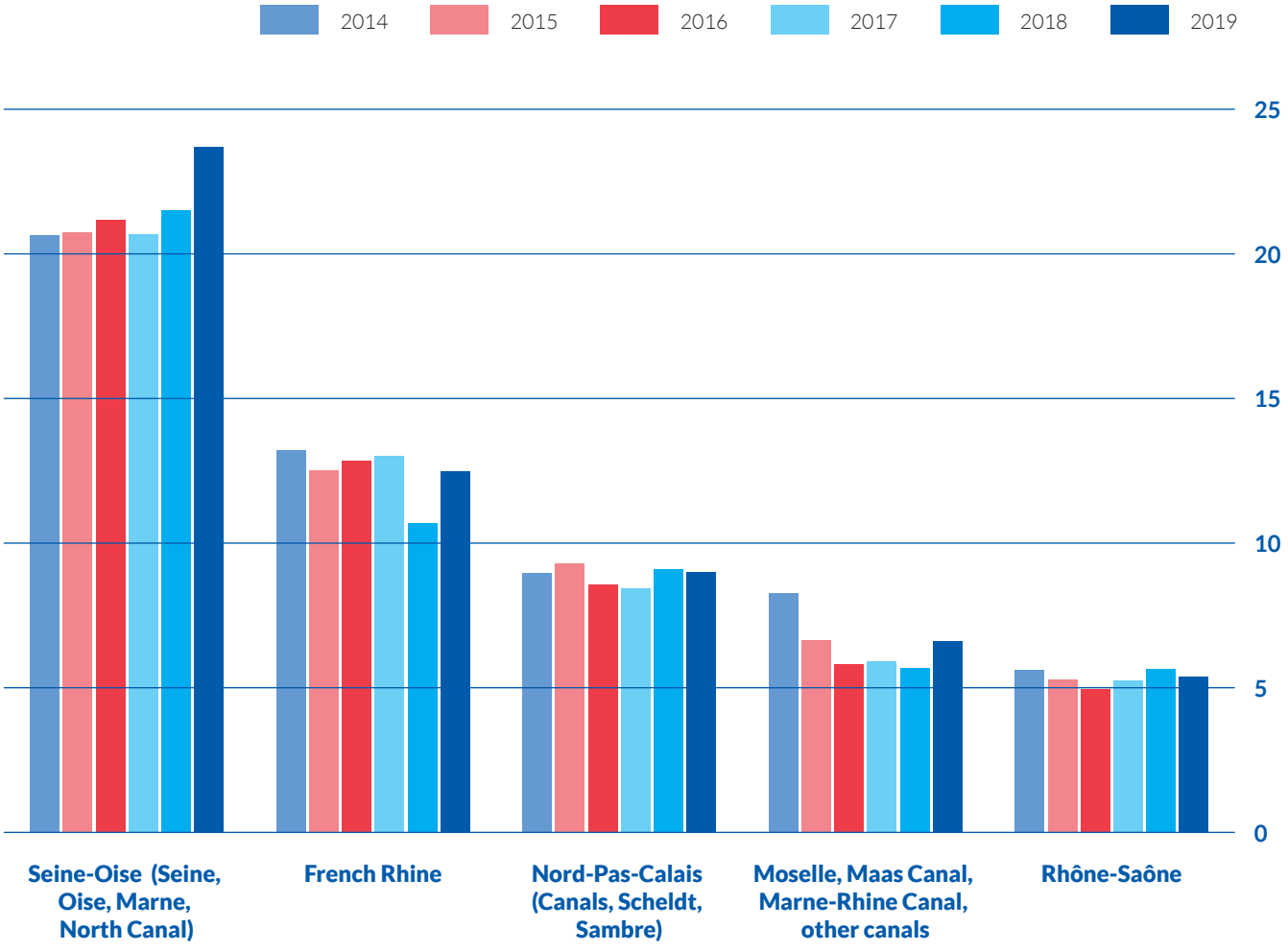
Long-term data over a period of 30 years for Wallonia show that agricultural products, fertilizers, metals, and machines follow a positive trend. Negative trends are observed for coal (since 2004) and for iron ore (since 2002). For the rest of the product segments, there is a constant tendency.

Inland waterways in France

In France, the year 2019 brought a very good harvest result, with 70.4 million tonnes of cereals including all kinds of wheat, spelt, rye, barley, and oats.[11] In 2018, the harvest result had been 61.7 million tonnes compared to only 53.5 million tonnes in 2016. Therefore, the increase of inland waterway transport of agricultural products (+11% on a national level) was somehow logical. In the Seine-Oise basin, agricultural transports increased by 15%, on the Moselle by 16%, and on Rhône and Saône by 11%.

Sands, stones and gravel also had a positive year, with an absolute increase of more than 3 million tonnes or +14%. In the Seine-Oise basin, 15.6 million tonnes represented 66% of total IWT volumes in this basin, and 61% of all sands, stones, gravel and building materials flowing on French inland waterways.

FIGURE 20: **GOODS TRANSPORTED ON INLAND WATERWAYS IN FRANCE** (IN MILLION TONNES)

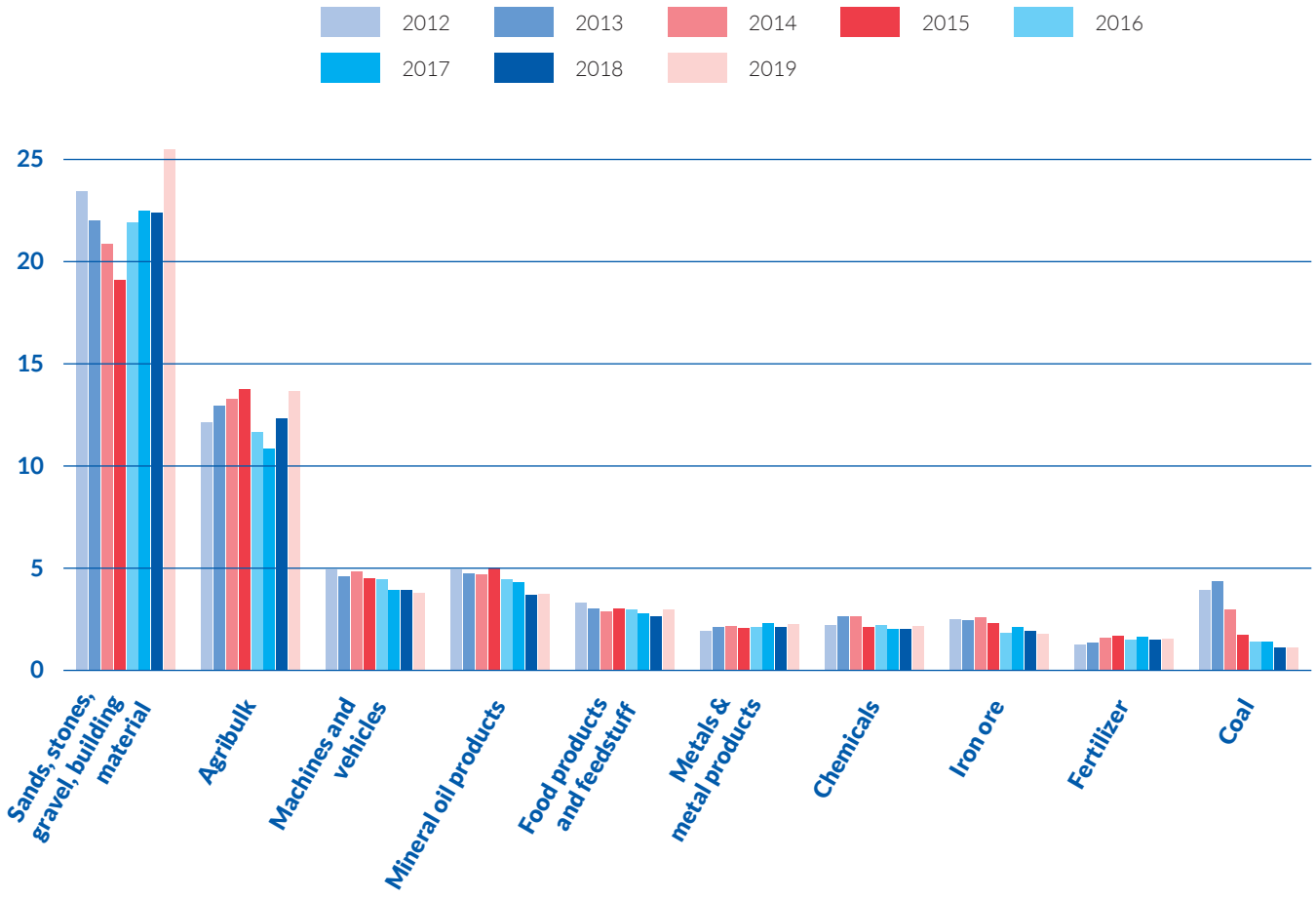


Source: VNF

[11] *Source: Eurostat [apro_cpsh1]*

The construction segment has undoubtedly followed a positive trend in recent years in France, fuelled by infrastructure works in Paris which make use of inland vessels for the delivery of construction materials and for the transport of excavation materials. The agribulk segment, as the second largest goods segment, is also evolving positively. But a general challenge in France is to integrate IWT further into logistical chains, especially in the containerised segment of machines and vehicles, but also for chemicals, mineral oil products and metals, where IWT volumes are significantly lower than in other western European countries.

FIGURE 21: **IWW GOODS TRANSPORT ON ALL FRENCH WATERWAYS**
(IN MILLION TONNES)



Source: VNF (data are based on goods classification NST/R)

Looking at data over a period of 30 years, it can be seen that agricultural products and fertilizers follow a positive long- term trend in France. For metals and metal products, this is also the case, but in comparison with the Belgian data, stronger cyclical variations (boom and recession 1998-2003, and again in 2005-2010) accompany the upward trend in France.

IWW TRANSPORT PER TYPE OF GOODS ON THE DANUBE[12]

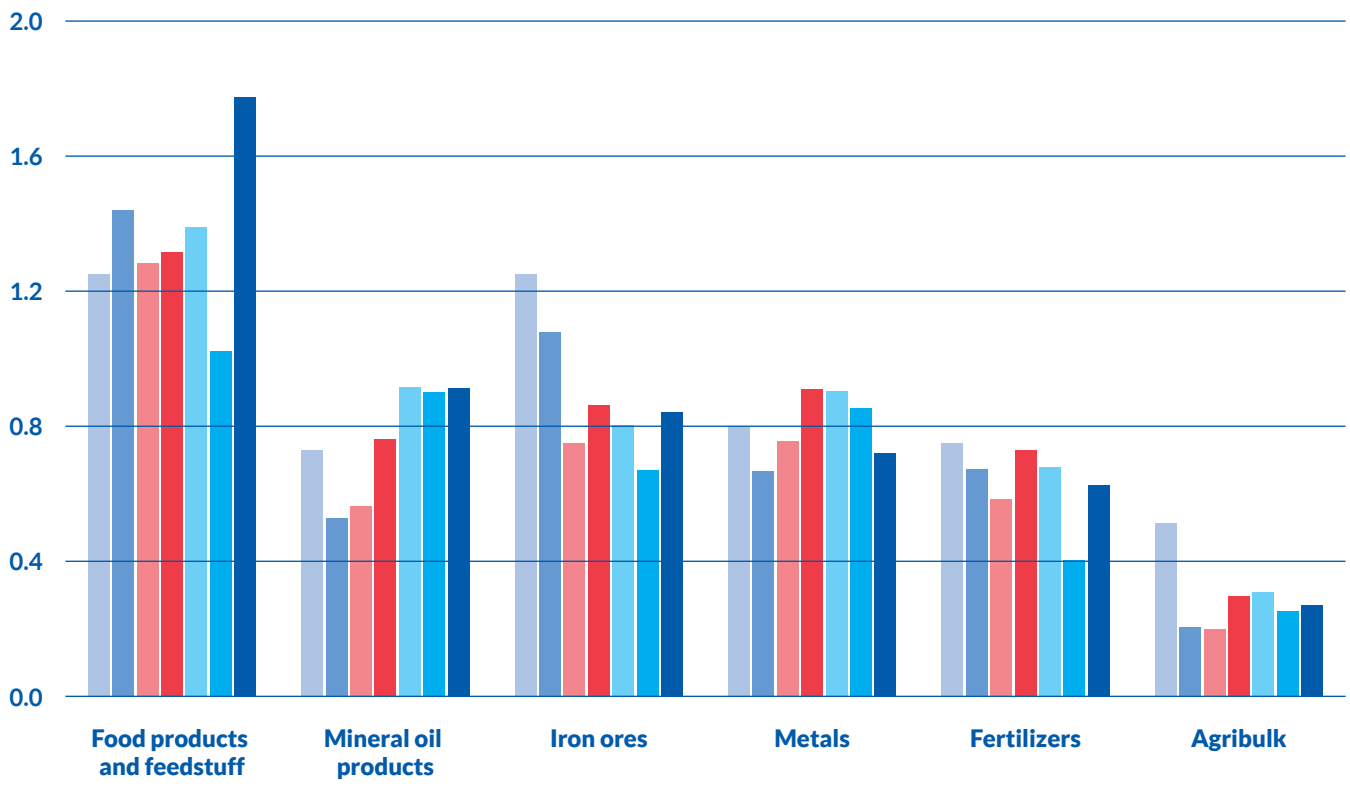
On the Danube, the introduction of new tariffs in international trade did not prevent the transport of raw materials for the steel industry (iron ore, pellets, coking coal) to grow in 2019. This can be regarded as a major difference when compared to the evolution in Rhine countries in 2019, where iron ore transport decreased.

An even stronger increase was recorded in the transport of food products and foodstuffs. At the same time, the transport of cereals (mainly wheat and maize) from the ports of the Middle Danube to the estuary ports at the Black Sea remained at the 2018 level. The transport of petroleum and chemical products (fertilizers) remained quite stable as well.

Goods transport on the Upper Danube is presented by data at the lock of Gabčíkovo. At this border point between Slovakia and Hungary, the total transport volume was 5.84 million tonnes in 2019, compared to 4.50 million tonnes in 2018 (+30%). Upstream transit traffic had a share of 63.3%, which was similar to earlier years (2017: 64.8%, 2018: 65.0%) and 59.4% of the volumes were moved by pushed convoys (58.2% in 2018). During times of stable navigation conditions, an average of 140-145 pushed convoys passed the lock of Gabčikovo each month.

[12] *The present part is based almost entirely on the Market Observation report of the Danube Commission.*

FIGURE 22: **GOODS TRANSPORT ON THE UPPER DANUBE** (IN MILLION TONNES) *



Source: Danube Commission market observation
**At Gabčíkovo (border between Slovakia and Hungary)*

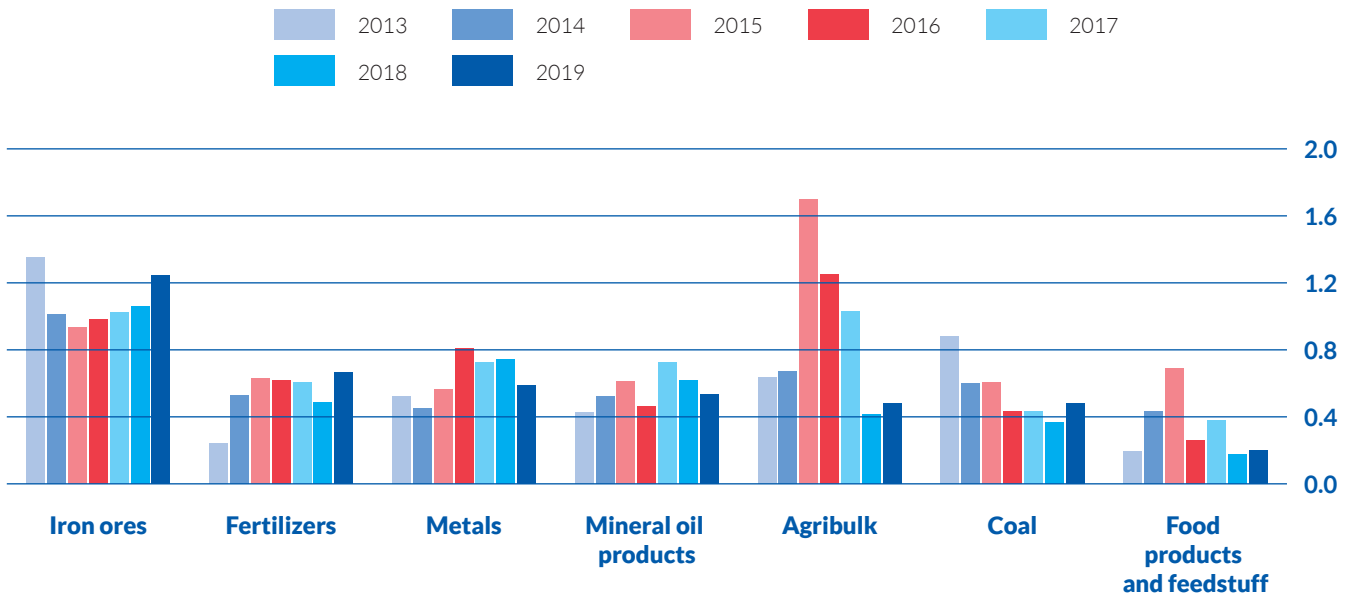
Food products and foodstuffs, as well as iron ores, are entirely transported upstream on the Upper Danube at this border point, while the other products are transported in both directions.

Goods transport on the Middle Danube is presented by data at the border point of Mohács in southern Hungary, near the border with Croatia and Serbia. Total cargo traffic represented 5.58 million tonnes in 2019. Total volumes in 2019 were 23.4% higher than the 4.5 million tonnes that were transported in 2018.

Upstream transit traffic also has the largest share on the Middle Danube (59.4% in 2019). Transport is done mainly by pushed convoys, which carried 4.44 million tonnes of cargo in 2019, a share of 79.5% of total traffic on the Middle Danube. During times when navigation conditions were stable, 60 to 70 pushed convoys passed the border point of Mohács each month.

Iron ore is entirely transported upstream on the Middle Danube, while grain, food products and foodstuffs are entirely transported downstream. The first point reflects the provision of the steel industry in Austria and Hungary with raw materials, while the second point reflects the export of agricultural products from Hungary downstream on the Danube to the Lower Danube region and to seaports.

FIGURE 23: **GOODS TRANSPORT ON THE MIDDLE DANUBE** (IN MILLION TONNES) *

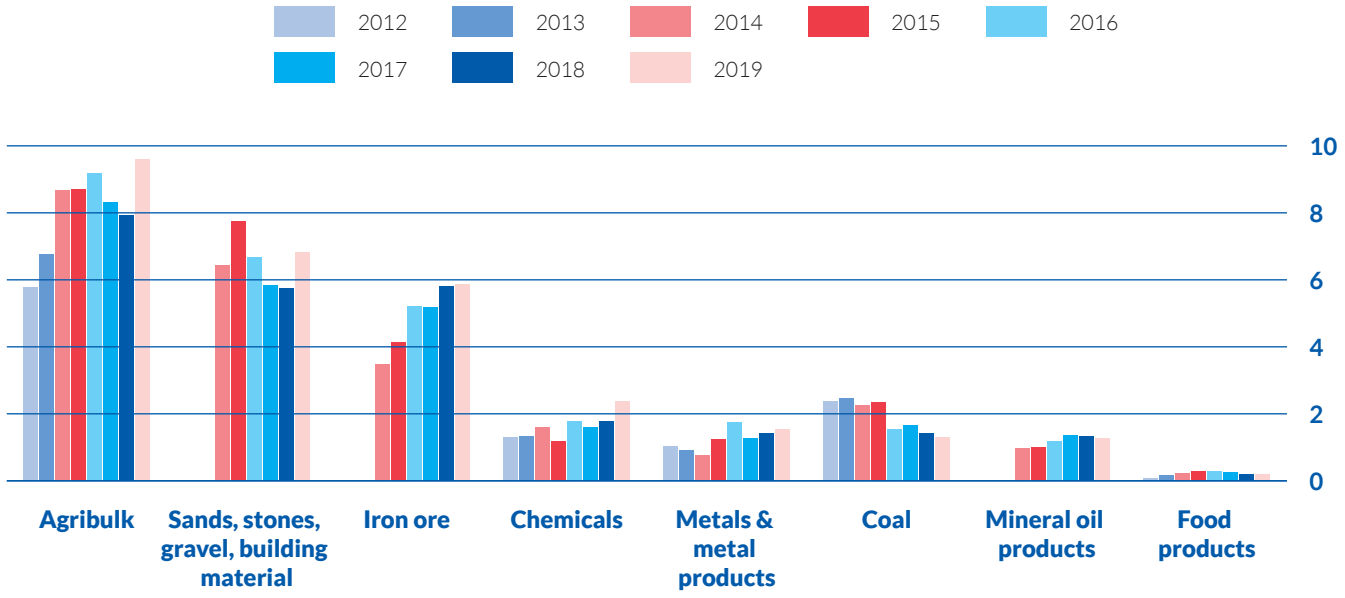


Source: Danube Commission market observation
** At Mohács (southern Hungary - border area with Croatia and Serbia)*

Inland waterway transport on the Lower Danube in Romania

On the lower Danube in Romania, a total amount of 33.26 mio. t was transported in 2019, 11.9 % more than in 2018. The share of agricultural products was almost 30% and they registered a plus of 21%. Iron ore, chemicals and metals continued their upward trend of previous years. It should be noted that iron ore transport on the Middle and the Lower Danube had a growth-orientated trend in recent years. This aspect will also be addressed later in chapter 8 (Outlook).

FIGURE 24: **INLAND WATERWAY TRANSPORT ON THE LOWER DANUBE IN ROMANIA** (IN MILLION TONNES) *



Sources: Eurostat [iww_go_atygo] and CCNR analysis
** For iron ore, sands, stones, and mineral oil products, data for the years before 2014 were not available.*

Agricultural transport on the Danube in Romania has certainly increased in the last ten years. But a comparison with other transport modes shows that road transport has grown faster, at least since 2010.

Traffic on the Lower Danube is not only carried out by inland vessels but also by seagoing vessels. Galati and Braila are the most important river-sea ports on the Lower Danube, and cargo transhipped by seagoing vessels increased strongly in 2019.

On the Sulina Canal, seagoing vessels carry out the main part of freight traffic. In 2019, traffic on the Sulina Canal reached a volume of 5,487,000 tonnes, which is 23.6% more than in 2018.

TABLE 2: **GOODS TRANSPORT ON THE SULINA CANAL**

Year, Mio. t	2014	2015	2016	2017	2018	2019
Total	3.67	3.85	3.76	4.31	4.44	5.49
Danube → Black Sea	3.24	3.26	3.25	3.61	3.67	4.33
Black Sea → Danube	0.42	0.58	0.51	0.70	0.77	1.16

Source: Danube Commission market observation

The Danube-Black Sea Canal runs from Cernavodă on the Danube river to Constanța (southern arm) and to Năvodari (northern arm) on the Black Sea.

TABLE 3: **GOODS TRANSPORT ON THE DANUBE-BLACK SEA CANAL**

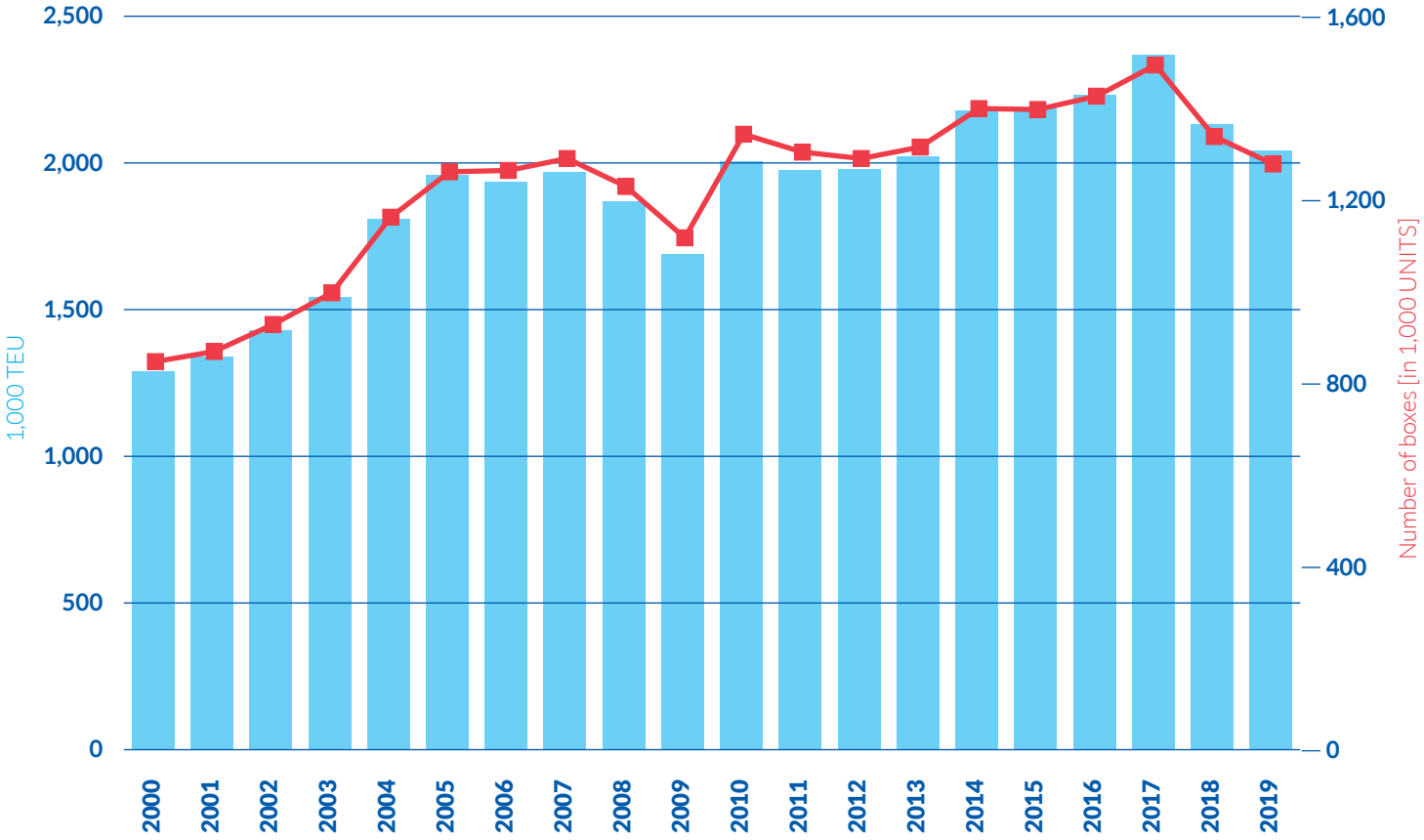
Year, Mio. t	2013	2014	2015	2016	2017	2018	2019
Total	13.96	14.43	14.02	14.55	13.77	14.12	16.74
International traffic	8.63	7.90	8.62	8.03	6.91	6.42	8.89
National traffic	5.33	6.53	5.40	6.52	6.86	7.7	7.85

Source: Danube Commission market observation

IWW CONTAINER TRANSPORT IN EUROPE

Container transport per river basin

FIGURE 25: **CONTAINER TRANSPORT ON THE TRADITIONAL RHINE** (IN 1,000 TEU AND IN 1,000 UNITS)**, 2000-2019**

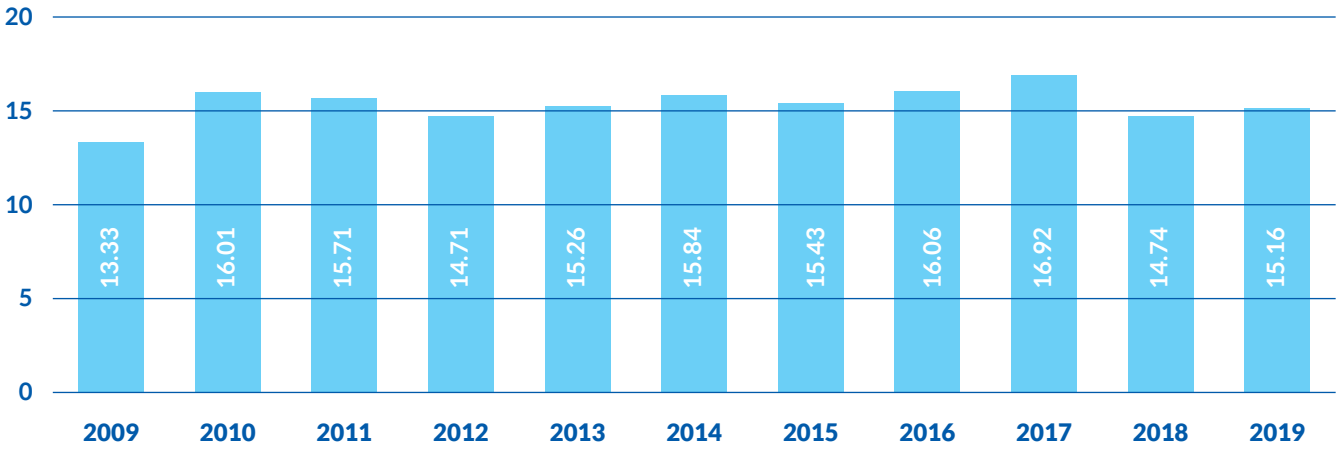


Source: Destatis

Although there was no substantial low-water period on the Rhine in 2019, the repercussions of 2018 on the modal split share were still felt by container operators.[13] Furthermore, the continuing congestion in the ports of Rotterdam and Antwerp also had a negative impact on the modal split, as well as the weak macroeconomic climate (declining industrial production, increasing tariffs and trade barriers, impact of Brexit). The result of 2.04 million TEU was 4.0% lower than in 2018, but the total net weight of goods in all containers was 2.9% higher and amounted to 15.16 mio. tonnes.

[13] *Source: Information from container operators on the Rhine*

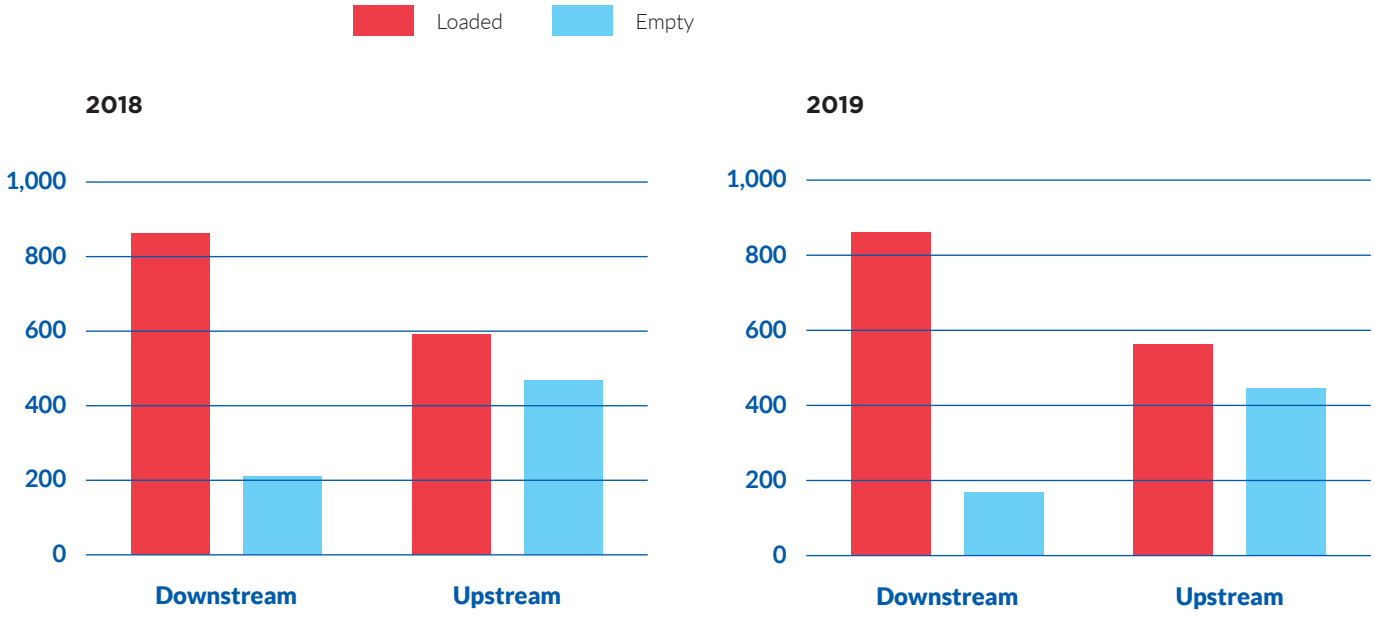
FIGURE 26: **CONTAINER TRANSPORT ON THE TRADITIONAL RHINE** (IN MILLION TONNES, NET WEIGHT OF GOODS IN CONTAINERS)**, 2009-2019**



Source: Destatis

German, French and Swiss regions use the Upper Rhine for exporting goods in containers, by sending them to Belgian and Dutch seaports, from where they are sent further away to overseas destinations. Therefore, the shares of containers loaded with goods and empty containers are different, depending on the transport direction. Containers transported downstream are more often loaded with goods than containers transported upstream.

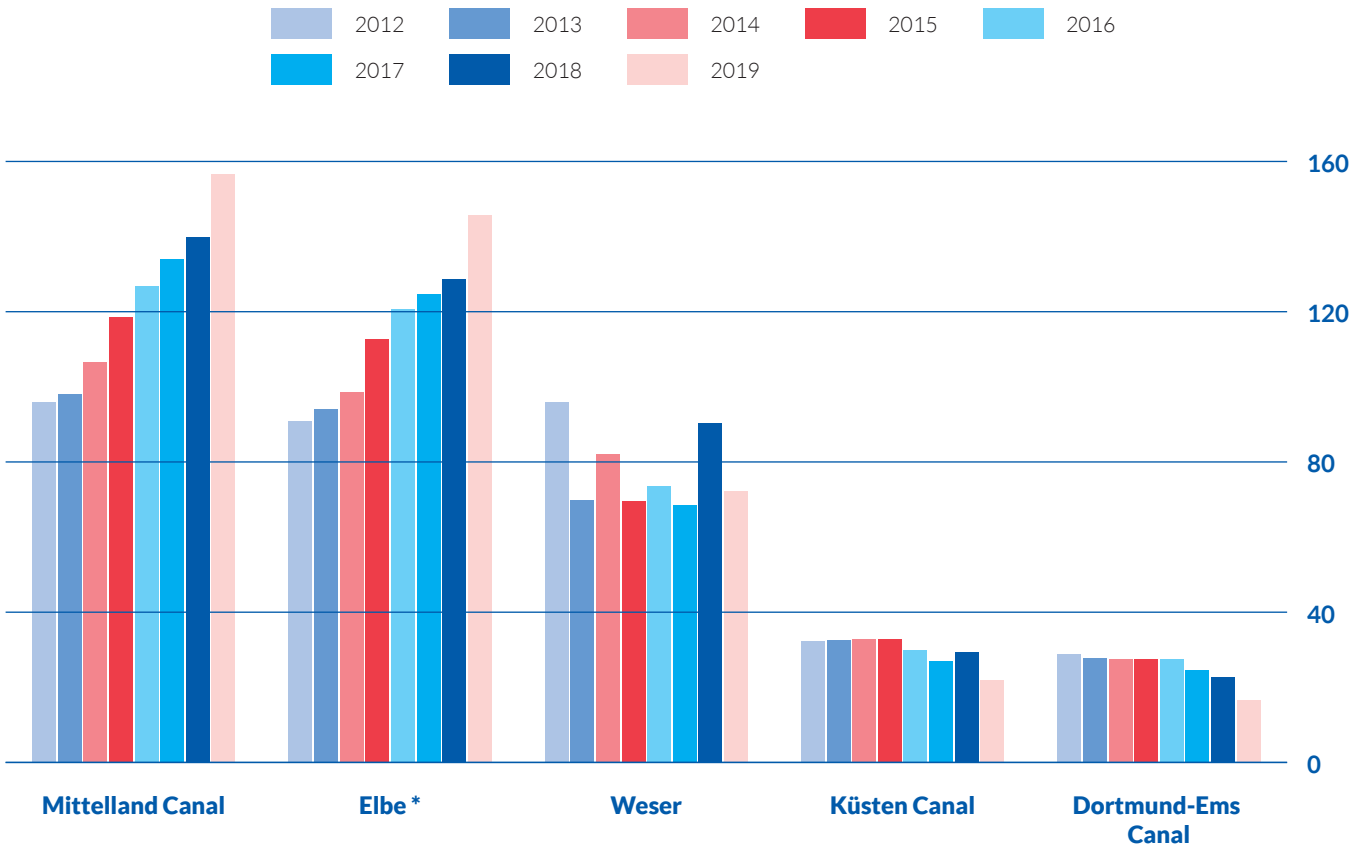
FIGURES 27 AND 28: **CONTAINER TRANSPORT ON THE TRADITIONAL RHINE, DOWNSTREAM VERSUS UPSTREAM TRAFFIC AND LOADED AND EMPTY CONTAINERS** (IN 1,000 TEU)



Source: CCNR analysis based on Destatis

Container transport on other German waterways than the Rhine can be divided into waterways in northern and eastern Germany (Mittelland Canal, Elbe, Weser, etc.) and waterways in western and southern Germany (west German canals, Main, Neckar, Moselle). The Dortmund-Ems Canal flows in both western and northern Germany, but its container traffic is more intense in its northern stretch near Emden and the North Sea.

FIGURE 29: **CONTAINER TRANSPORT IN NORTHERN AND EASTERN PARTS OF GERMANY** (IN 1,000 TEU)

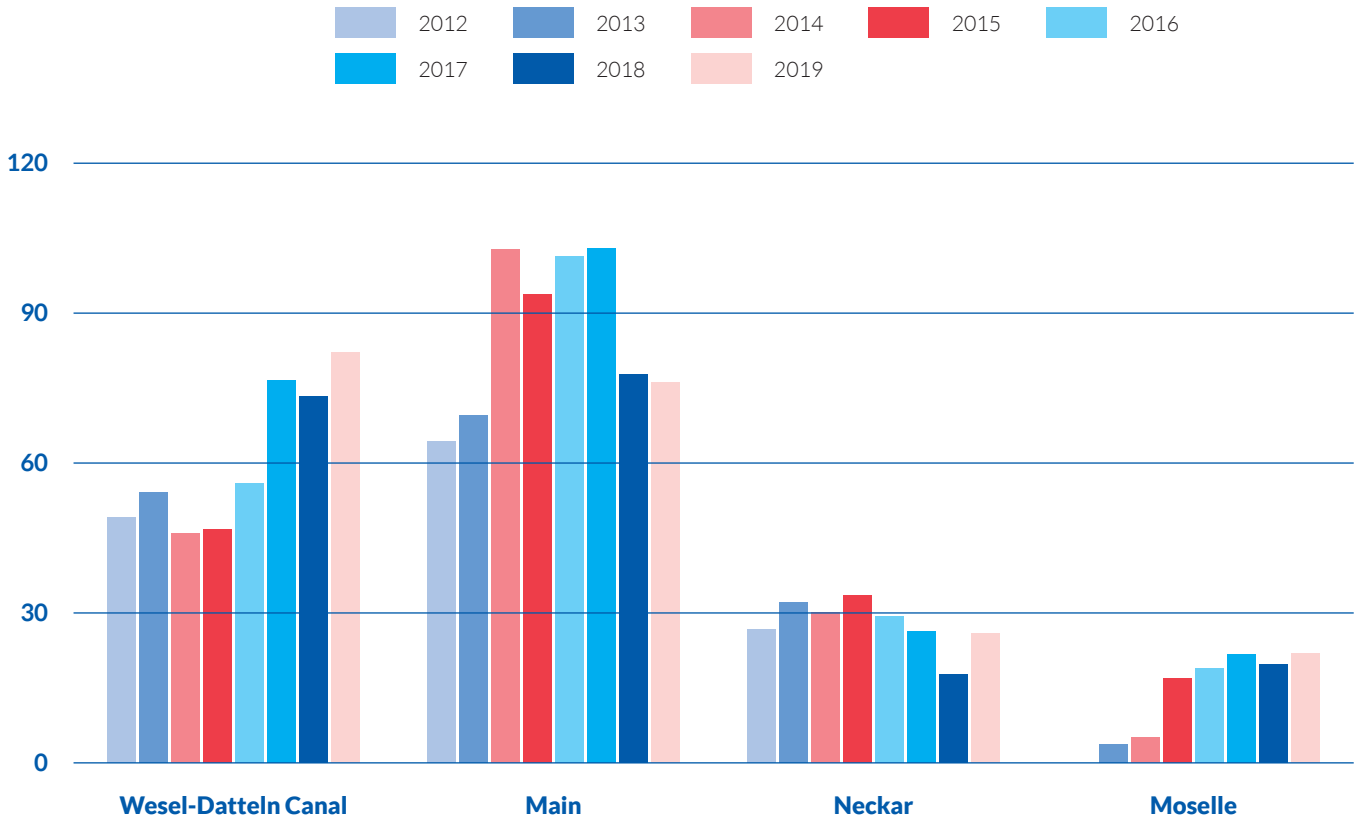


Source: Destatis
** Elbe = whole Elbe region including Upper, Middle, Lower Elbe and Elbe Lateral Canal*

On the Elbe and the Mittelland Canal the results in 2019 were much higher than in 2018 (+13% and +12%). It must be added that by far the largest part of container transport on the Elbe takes place on the Lower Elbe (between Hamburg and the North Sea), the northern stretch of the Middle Elbe (between Schnackenburg and Hamburg) and on the Elbe Lateral Canal. Container transport on the Upper Elbe, between the German-Czech border and Meißen, is still much lower.[14]

[14] In 2019, container transport on the Upper Elbe was 6,087 TEU, compared to 127,373 TEU on the Middle Elbe between Schnackenburg and Hamburg, and 128,749 TEU on the Lower Elbe between Hamburg and the North Sea. Source: Destatis.

FIGURE 30: **CONTAINER TRANSPORT IN WESTERN AND SOUTHERN PARTS OF GERMANY**
(IN 1,000 TEU)



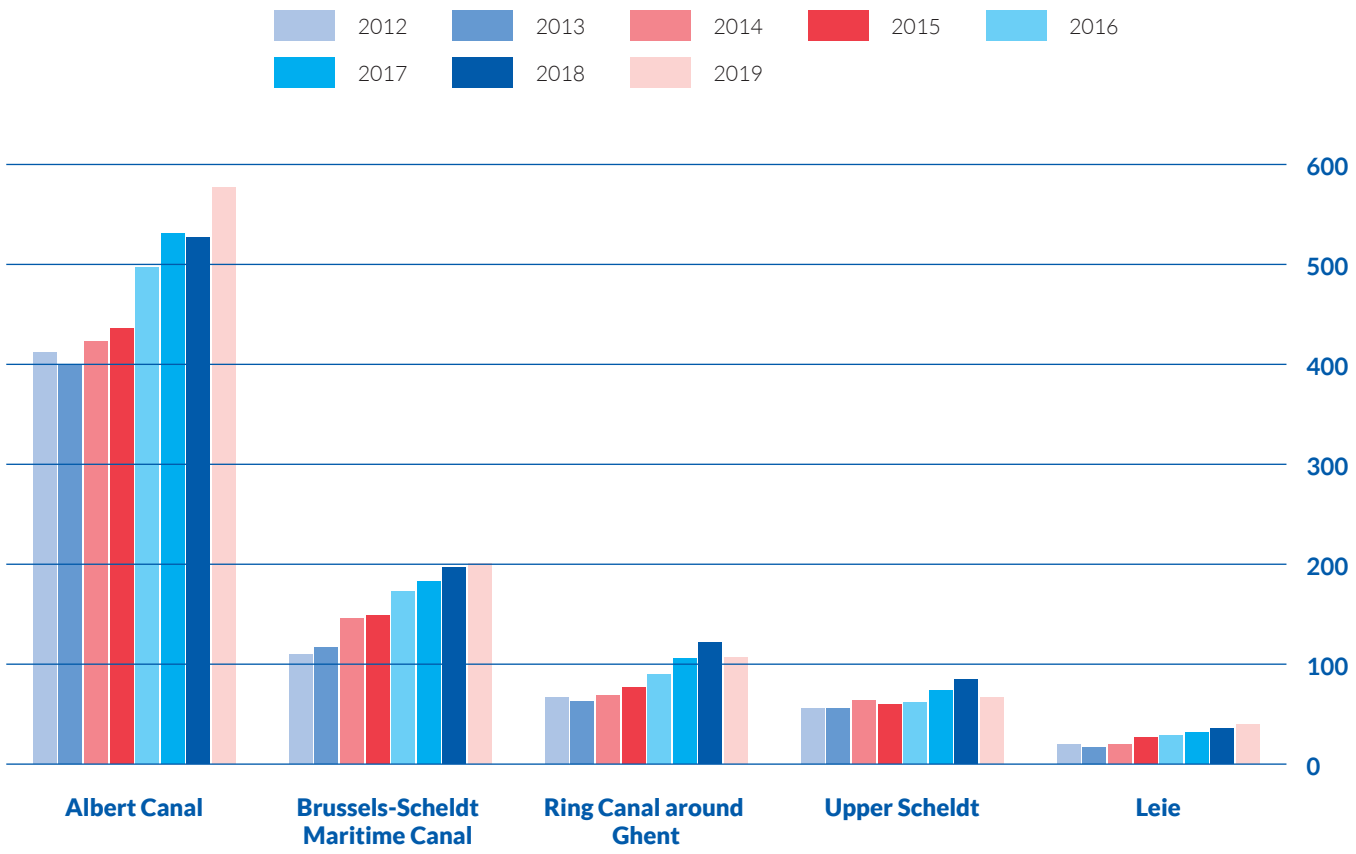
Sources: Destatis and Moselle Commission (Moselle)

The Wesel-Datteln Canal is an important canal in the Ruhr area, and container traffic was 12% higher in 2019 than in 2018. TEU on the Neckar were also recovering from 2018, with a plus of 46%. Container transport on the Main has not yet recovered from the low water period of 2018.

In Flanders, container transport increased by 4% in 2019 and reached 887,581 TEU. Tonnage transported in containers also increased by 4% and settled on exactly 8.0 million tonnes. Container transport on the Albert Canal increased by 9.5% up to a level of 577,000 TEU.

On the central Belgian north-south axis between Antwerp, Brussels and Charleroi (Brussels-Scheldt Maritime Canal), 201,000 TEU (+1.8%) were registered, and there was also an increase of 11.2% on the Leie (Lys).

FIGURE 31: **CONTAINER TRANSPORT IN BELGIUM-FLANDERS** (IN 1,000 TEU)



Source: De Vlaamse Waterweg

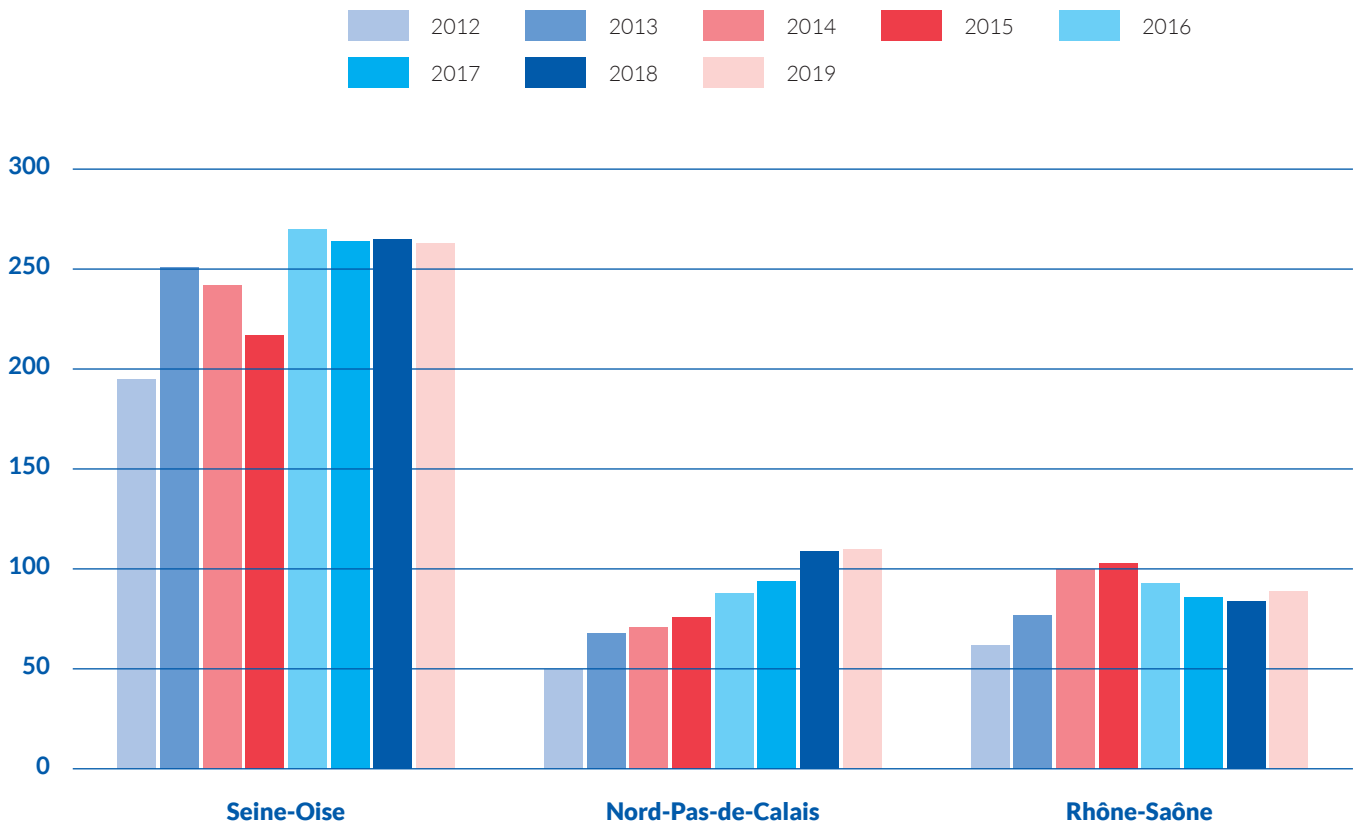
In Wallonia, the Waterway administration collects data on container transport on the basis of several terminals.[15] For 2019, a new record was reached with 117,815 TEU in total.

In the neighbouring Nord-Pas-de-Calais region in France, container transport continued its success story as well, reaching 110,000 TEU in 2019. This was 1,048 TEU more than in 2018 (+1%). The statistical report of the regional VNF district of Nord-Pas-de-Calais reports two different types of container lines: commercial container lines (88,829 TEU) and lines with transport of waste that is recycled (20,865 TEU). The container lines with an increase in 2019 were notably the commercial lines of Dunkerque, Dourges and Anzin.

In the Seine basin, container transport was 1% lower in 2019 than the previous year. According to VNF, this decrease was due to the strikes in the French ports of Le Havre and Rouen at the end of 2019.

[15] *Liège Trilogiport, Liège Container Terminal, Euroports Inland Terminals at Monsin, Terminaux de Ghlien et de Garocentre – La Louvière*

FIGURE 32: **CONTAINER TRANSPORT PER BASIN IN FRANCE** (IN 1,000 TEU) *



Source: VNF
** The French Rhine is not shown here as, in the French statistics, only French Rhine ports are taken into account, although container transport on the Upper Rhine is also fuelled by German and Swiss ports.*

In large French ports, waterside container transport took a leap forward. Paris registered +13%, Lyon +9%, Strasbourg +16%. According to port statistics, the modal split share of waterside container traffic within the whole container transport in the port (road, rail, water) was 32% in Paris, 25% in Lyon, 20% in Strasbourg, 33% in Lille, and 35% in Mulhouse.

TABLE 4: **WATERSIDE CONTAINER TRAFFIC IN LARGE FRENCH PORTS** (IN 1,000 TEU)

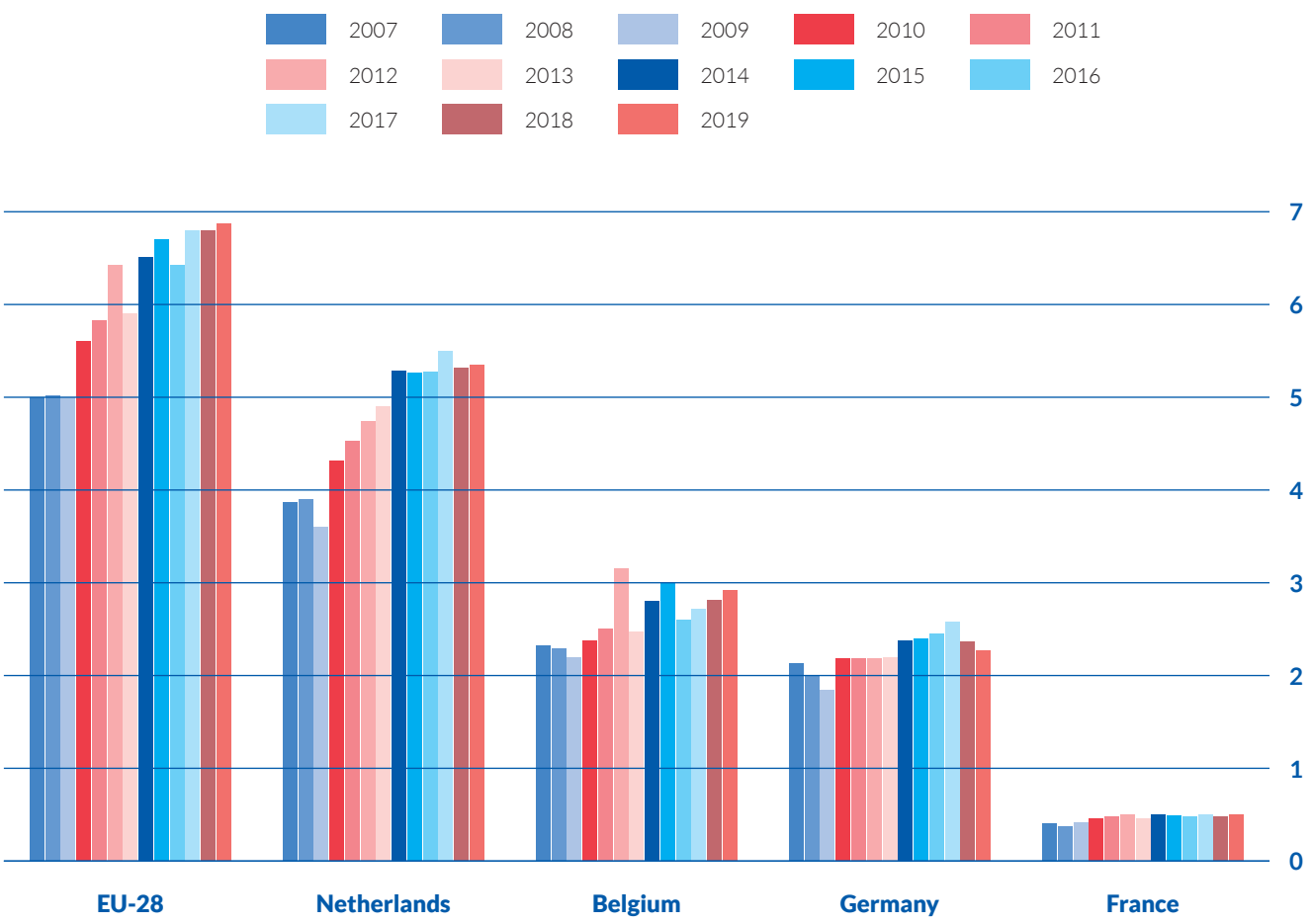
	2015	2016	2017	2018	2019
Ports of Paris (Seine-Oise)	163.9	161.3	161.9	157.9	178.9
Port of Lyon (Rhône-Saône)	91.3	77.5	72.7	70.8	77.3
Port of Strasbourg (Rhine)	102.4	105.2	106.5	66.0	76.7
Port of Lille (Nord-Pas-de-Calais)	57.8	56.2	58.7	53.3	52.7
Port of Mulhouse (Rhine)	30.4	28.7	32.8	28.6	28.6

Sources: Ports de Paris, Port de Lyon, Port de Strasbourg, Port de Lille, Port de Mulhouse, VNF

Container transport per country in Europe

It is the case that 99.9% of all container transport performance (TKM) on European inland waterways occurs in four countries only: the Netherlands, Belgium, Germany and France. In terms of TEU, container transport progressed by +1% in the Netherlands, by +4% both in France and in Belgium, but was 4% lower in Germany (for the explanation, see section on Rhine container transport).

FIGURE 33: **IWW CONTAINER TRANSPORT PER COUNTRY IN EUROPE** (IN MILLION TEU) *



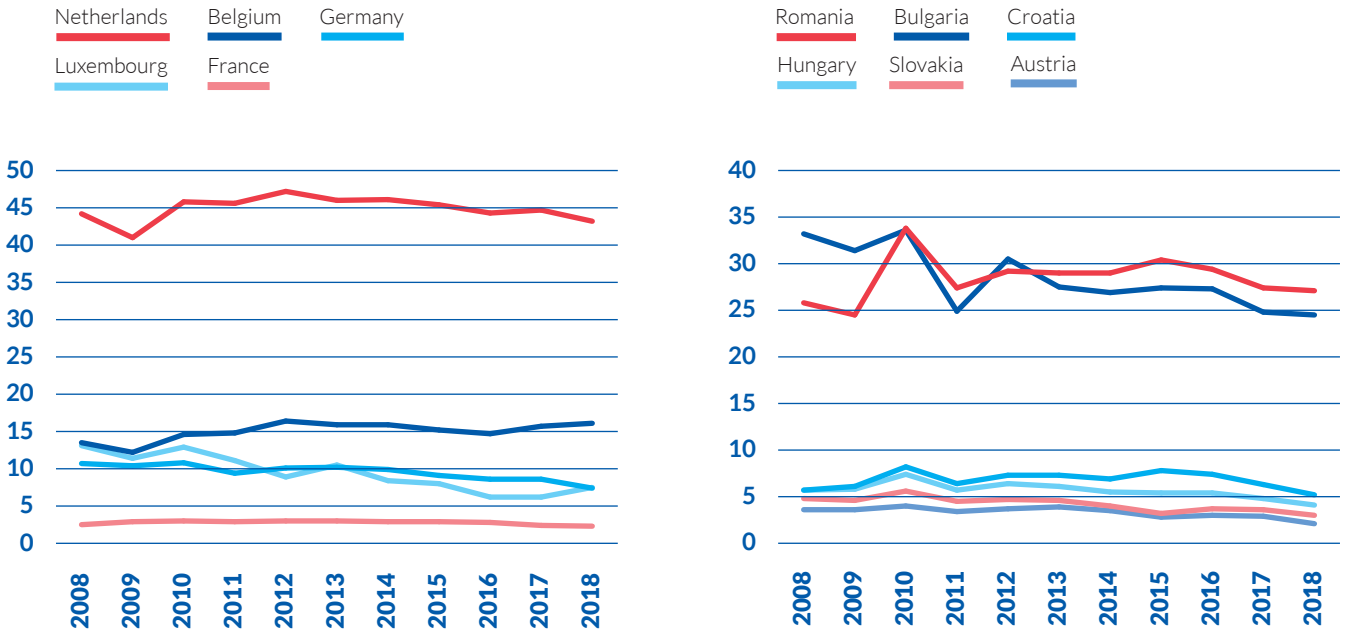
Source: Eurostat [iww_go_actygo]
**The figures for the countries cannot be added together because this would incur double counting. (The total value for EU-28 takes into account cross-border container traffic.)*

There were 51.2 million tonnes of cargo in containers in the Netherlands (equalling 14.2% of total IWW transport in the country), 35.5 million tonnes in Belgium (17.1% of total Belgian IWT), 21.2 million tonnes in Germany (10.4% of total German IWT) and 3.5 million tonnes in France (5.5% of total French IWT).

Luxembourg is a country where container transport has developed to significant levels since 2014, due to emerging Moselle container traffic. A volume of 11,509 TEU in 2019 and 0.137 million tonnes of goods in containers were transported on the Moselle stretch in Luxembourg. This was a clear increase compared to 2018 (+20% for TEU and +29% for tonnes).

INLAND NAVIGATION
AND OTHER MODES OF TRANSPORT

FIGURES 34 AND 35: **IWW MODAL SPLIT SHARE EVOLUTION IN RHINE AND DANUBE COUNTRIES** (%, BASED ON TONNE-KILOMETRES) *



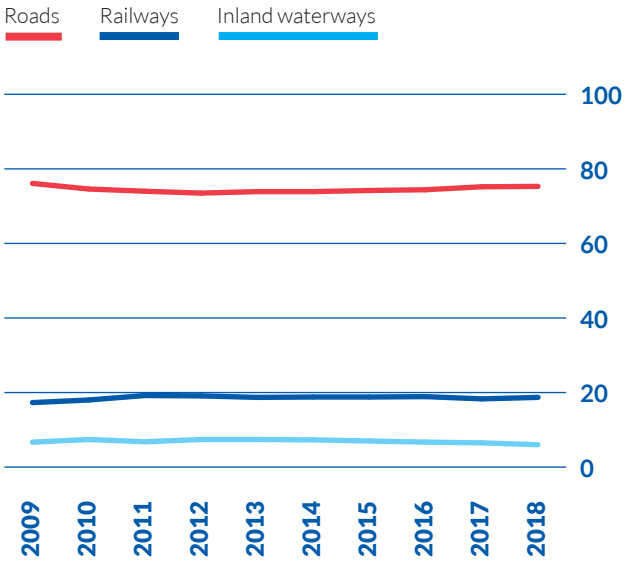
Source: Eurostat [tran_hv_frmod]

**Share of inland waterway transport performance in total (IWT + Road + Rail) transport performance. Road data include the transport performance of trucks registered in foreign countries, according to the new series [tran_hv_frmod] made available by Eurostat only recently. Road data registered in the Eurostat database for the series [road_go_ta_tg] used for the calculation of modal split figures in previous reports were based on nationality of registration of the vehicle and not on transport on national territory. This methodological difference has some effects on the modal split shares presented in previous reports both per country and per goods segment. For this reason, it was decided not to show IWW modal split evolution per goods segment in this year's report until a better methodology can be found.*

The modal split share in the Netherlands increased between 2009 and 2012, reaching 47.2% in 2012. In the following years, it decreased, reaching 43.2% in 2018. The reduction in coal transport, which started in 2015, and the low water periods in 2015, 2017 and 2018 can explain parts of this downward trend.

Modal split of freight transport (in %) 2009-2018 for EU 28

FIGURE 36: **MODAL SPLIT SHARE OF INLAND TRANSPORT MODES IN THE EU-28** (IN %)



Source : Eurostat [tran_hv_frmod]

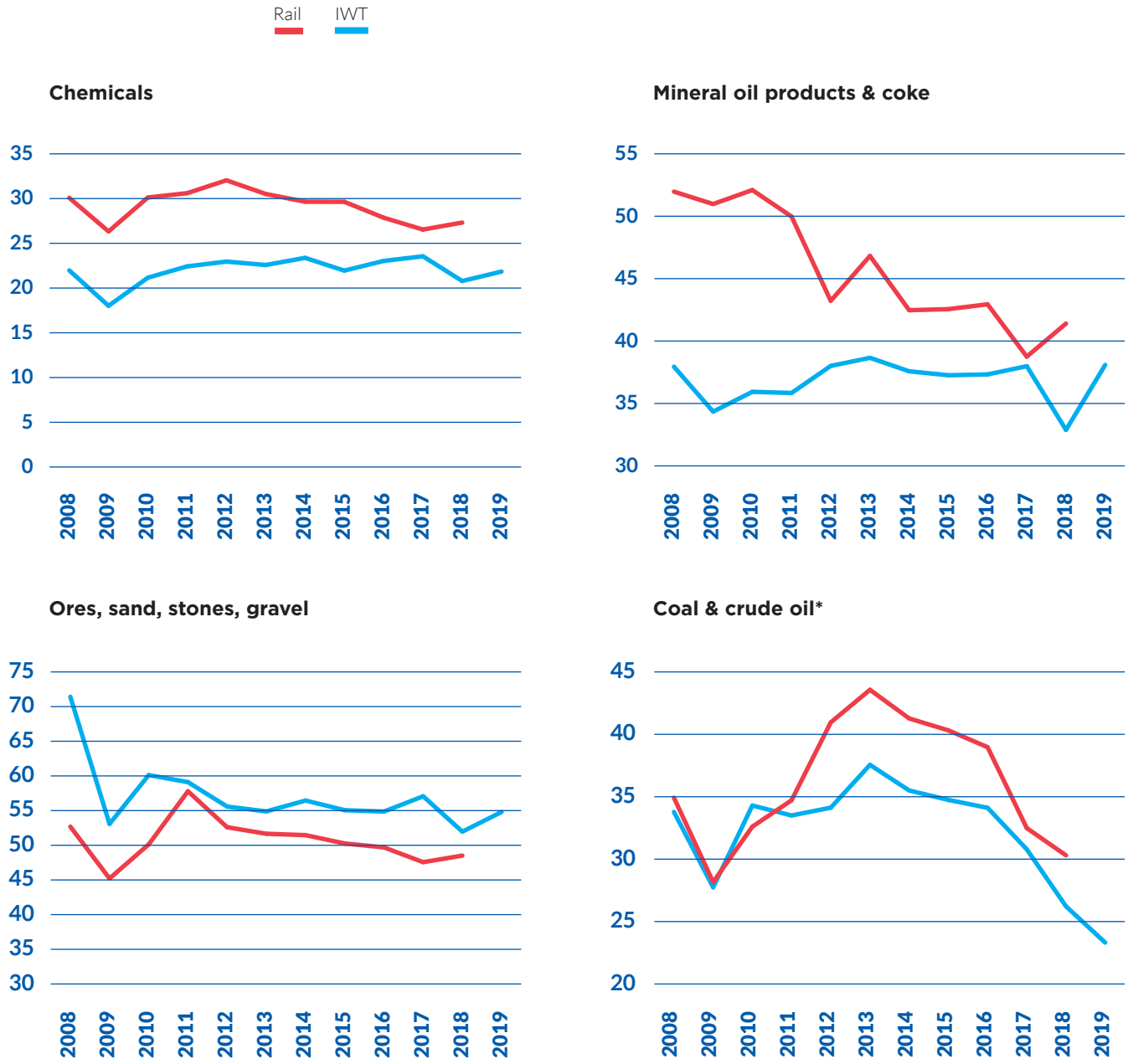
The modal share of IWT on the level of the EU-27 was 6.0% in 2018 and thus behind road transport (75.3%) and rail transport (18.7%). As many EU countries do not have inland waterways, the overall modal split share of IWT on the EU level should not be used as a performance indicator for the success of inland waterway transport in the EU. In order to measure the success of IWT in the transport market, it is better to look at the modal split share evolution of IWT in countries where there is a sufficiently dense inland waterway network, such as in the Netherlands, Belgium or Germany, or where inland navigation traditionally has a high importance for goods transport, for example in many Danube countries.

For Germany, a long-term comparison between IWT and rail transport shows that inland waterway transport has mostly performed better than rail transport in the mass cargo market segments. For liquid cargo, the trend in rail transport was quite negative, while it was slightly positive in inland waterway transport. IWT volumes of ores, sands, stones, and gravel (taken together) are on a lower, but – apart from low water effects - rather constant level since the end of the financial crisis. In rail transport, they have evolved more negatively since 2011. For coal, the trends in both transport modes are similar.

Considering the 2017 and the 2018 data, it is seen that rail transport took over volumes from IWT during the low water year 2018. But a comparison of the volumes that IWT lost with the volumes that rail transport gained, shows that the quantities do not match. Indeed, the chemical volumes that were lost for inland waterway transport in 2018 (2.76 mio. t) were 3.5 times higher than the volumes that rail transport gained in 2018 (0.78 mio. t = 28% of what IWT lost). This shows that railway transport could not substitute inland waterway transport during the low water period. It shows also that the overall freight transport decreased, explaining the interruptions of logistical and production chains and the loss of several hundreds of millions of Euro for the chemical industry.

For mineral oil products, the ratio is a little lower, but volumes lost for IWT were still twice as high than the volumes gained by rail. For ores, sands, stones and gravel, the volumes that IWT lost were 5.3 times higher than the volumes gained by railway transport in 2018.

FIGURES 37, 38, 39 AND 40: **TRANSPORT VOLUMES FOR LARGE TRADITIONAL GOODS SEGMENTS IN INLAND WATERWAY AND RAIL TRANSPORT IN GERMANY**
(IN MILLION TONNES)

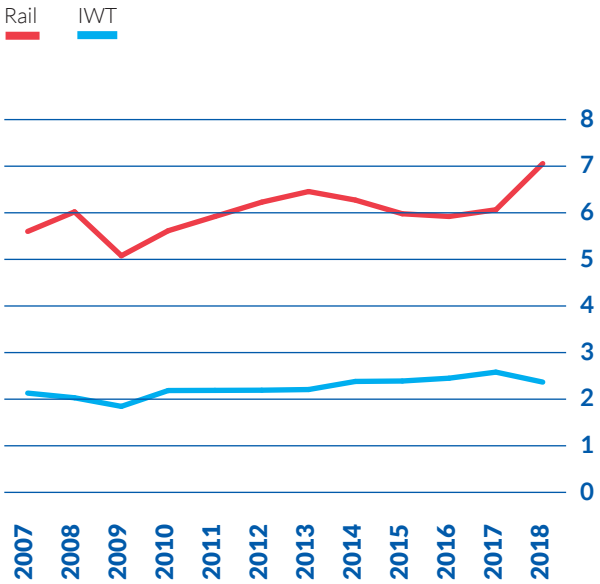


Source: Eurostat [rail_go_grpgood], [iww_go_atygo]

** The name of this product group within the NST 2007 classification is coal & crude oil, but the share of coal is 99.9 %. (Crude oil is transported mostly by pipeline, not by barge or rail).*

In container transport, rail transport still has a lead. During the time period 2008-2018, railways transported on average 2.7 times as many TEU each year than inland vessels in Germany. However, between 2013 and 2017, this factor decreased continuously from 2.9 down to 2.4. Inland vessels gained market shares in container transport during this period. It was only the low-water period in 2018 that interrupted this trend, as in 2018 the factor increased to 3.0.

FIGURE 41: **TEU VOLUMES TRANSPORTED BY RAIL AND ON INLAND WATERWAYS IN GERMANY** (IN MIO. TEU)



Source: Eurostat [rail_go_contnbr], [iww_go_actygo]

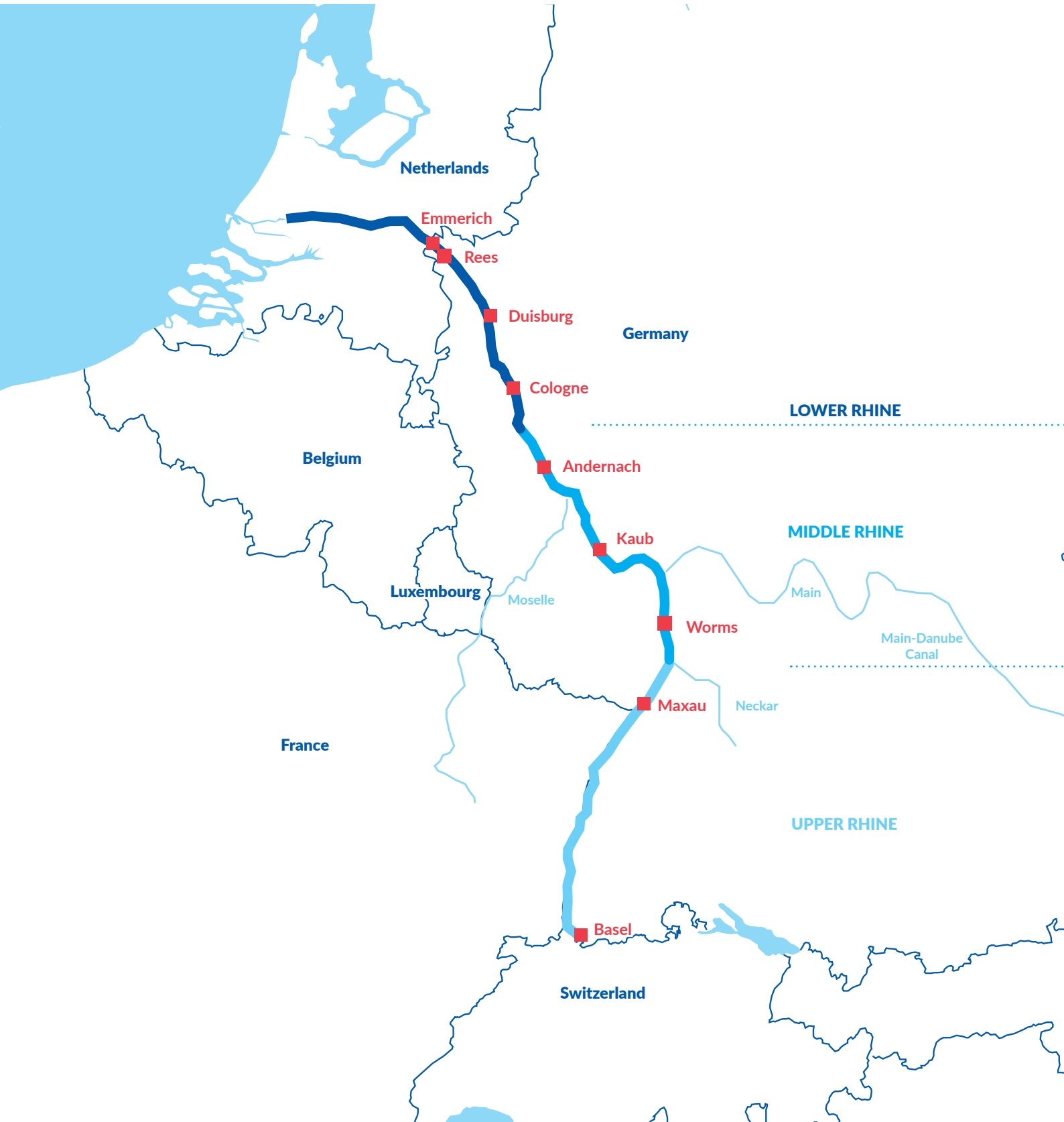
03

WATER LEVELS AND FREIGHT RATES

- Navigating conditions on the Rhine and Danube were by far less critical in 2019 than the previous year. Nevertheless, on certain stretches of the Upper and the Lower Danube, water levels dropped to below a critical threshold on a relatively high number of days per year.
- Freight rates for dry cargo transport did not show any major upward movements in 2019, due to the absence of low water periods and because of weak macroeconomic conditions. Towards the end of the year 2019, dry cargo freight rates moved downwards, reflecting the deterioration in dry cargo transport demand.
- Freight rates for liquid cargo also settled at lower levels in 2019, but it could be observed that these levels were nevertheless higher than before the low water period of late 2018.

WATER LEVELS

AND AVAILABLE VESSELS' DRAUGHT AT GAUGING STATIONS ON RHINE AND DANUBE



Kienstock, Upper Danube (AUT)

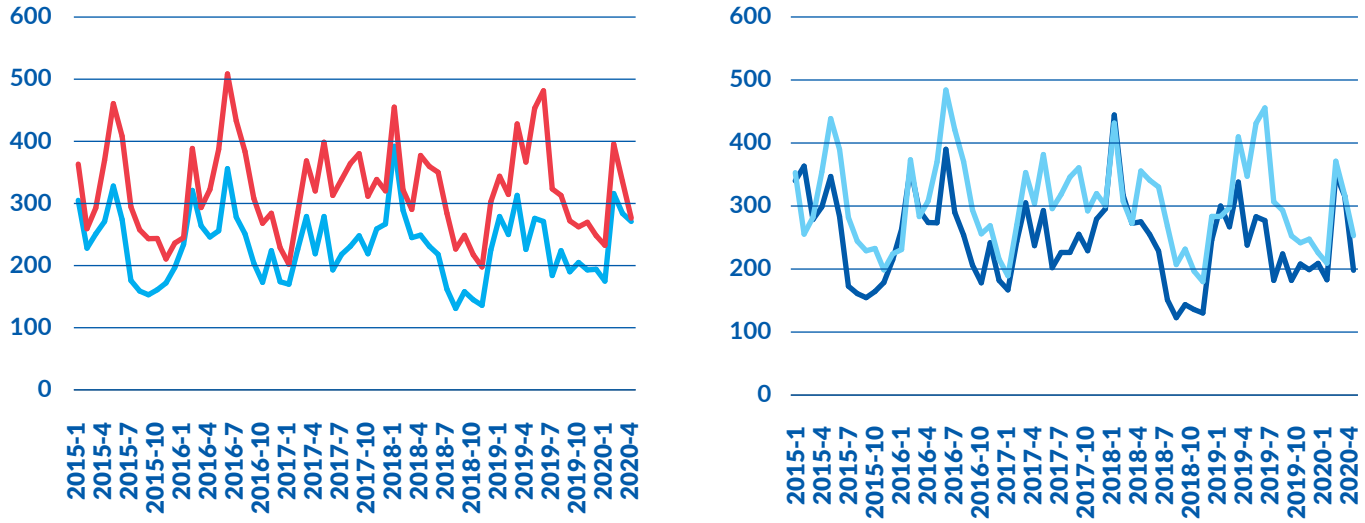
Hofkirchen, Upper Danube (DE)

Wildungsmauer, Upper Danube (AUT)

Pfelling, Upper Danube (DE)

Overall, in 2019, hydraulicity conditions on the Danube and Rhine were much better than in 2018. However, on the German Upper Danube, the available draught of vessels dropped below 2 metres in the second half of the year, and again in April and May 2020.

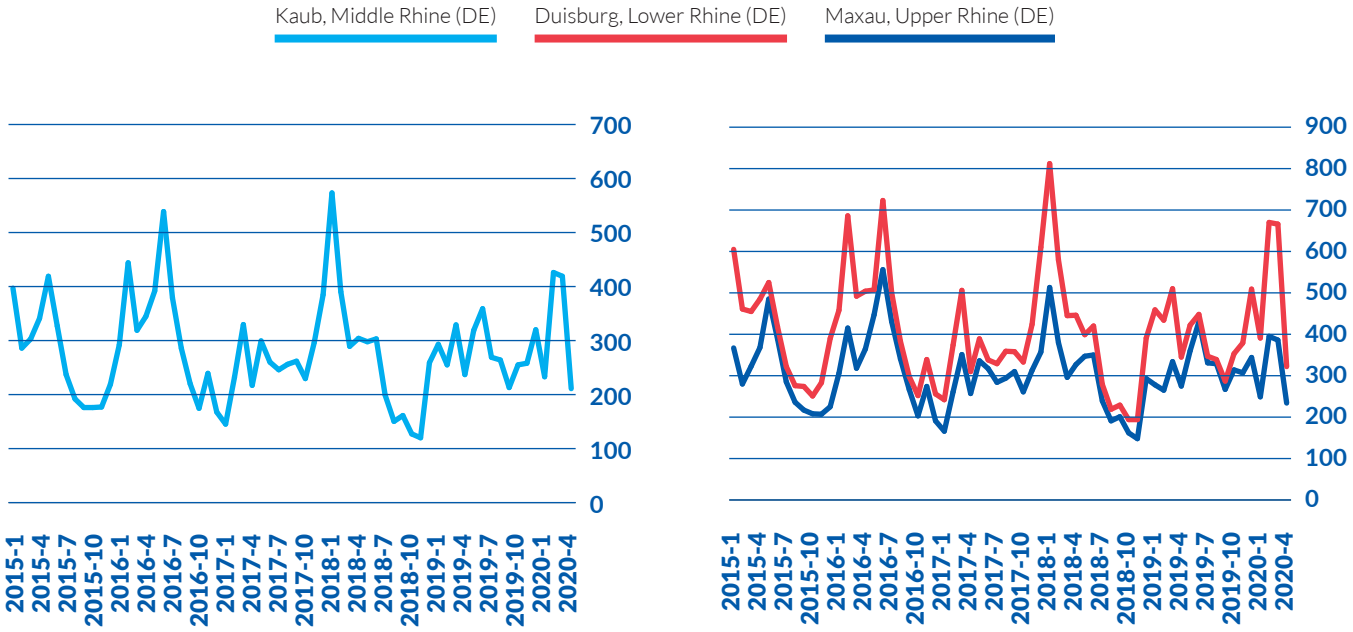
FIGURES 1 AND 2: **AVAILABLE DRAUGHT OF VESSELS AT GAUGING STATIONS ON THE AUSTRIAN AND GERMAN DANUBE** (CM)



Source: CCNR based on data from the German Federal Waterways and Shipping Administration, provided by the Federal Institute of Hydrology (BfG); Federal State of Lower Austria

On the Rhine the available draught of vessels was above 2 metres during the whole year 2019. The only month which was slightly more critical was September 2019. In the first semester of 2020, water levels fell during a dry month of April 2020 but recovered in the first half of May 2020.

FIGURES 3 AND 4: **AVAILABLE DRAUGHT OF VESSELS AT GAUGING STATIONS ON THE GERMAN RHINE** (CM)



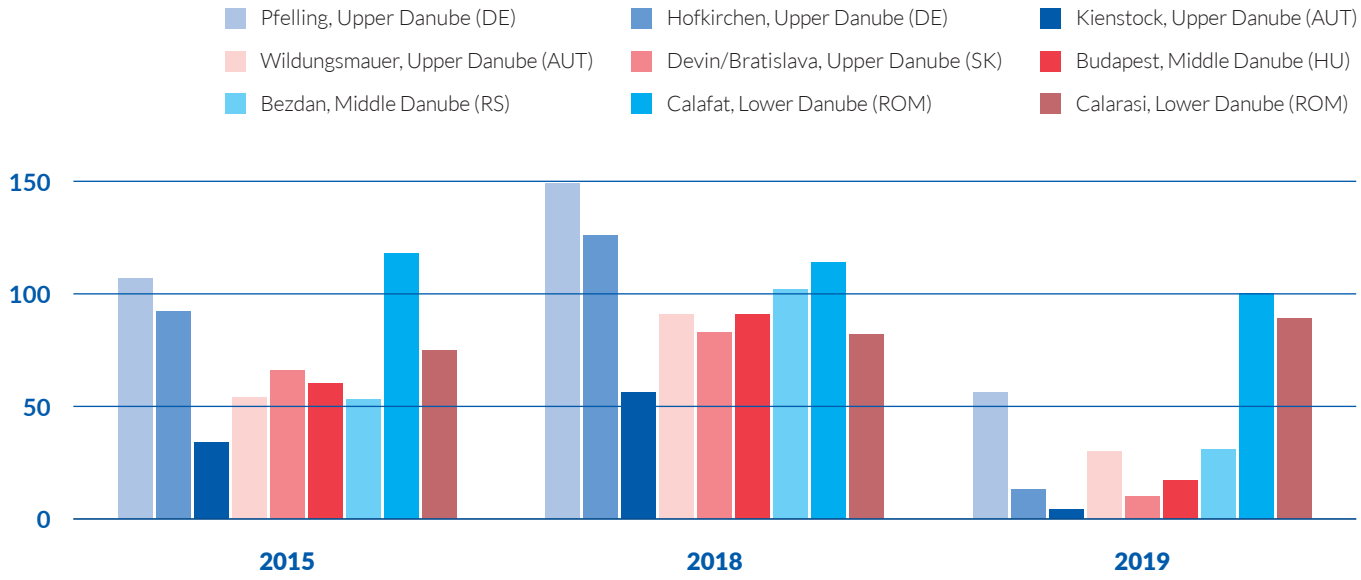
Sources: CCNR based on data from the German Federal Waterways and Shipping Administration, provided by the Federal Institute of Hydrology (BfG)

Another method of analysing navigating conditions is to count the number of days during which the water levels fell below a critical threshold. For the Rhine and Danube, such a critical threshold is the Equivalent water level, or the Low navigable water level as it is called on the Danube. It is defined as the water level reached or exceeded at a gauging station on an average of 94% of days in a year (= on 343 days) over a reference period of several decades.[16] Its value is different for each gauging station.

The number of days during which this critical threshold is not reached indicates the length of time over a year with a severe low water situation. From the nine gauging stations along the Danube, it can be seen that for the German Danube, critical low water situations occurred more frequently in 2015 and 2018 (two recent years with low water periods) than on the neighbouring Austrian Danube, which has similar results to the available draught shown previously. Moving downstream on the Danube, from Austria to Slovakia, Hungary, Croatia, Serbia and finally to Romania, the tendency for critical low water situations again becoming more frequent, is noted.

[16] *For the Danube, see: Via Donau (http://www.viadonau.org/wirtschaft/transportachse-donau/schiffbarkeit)*

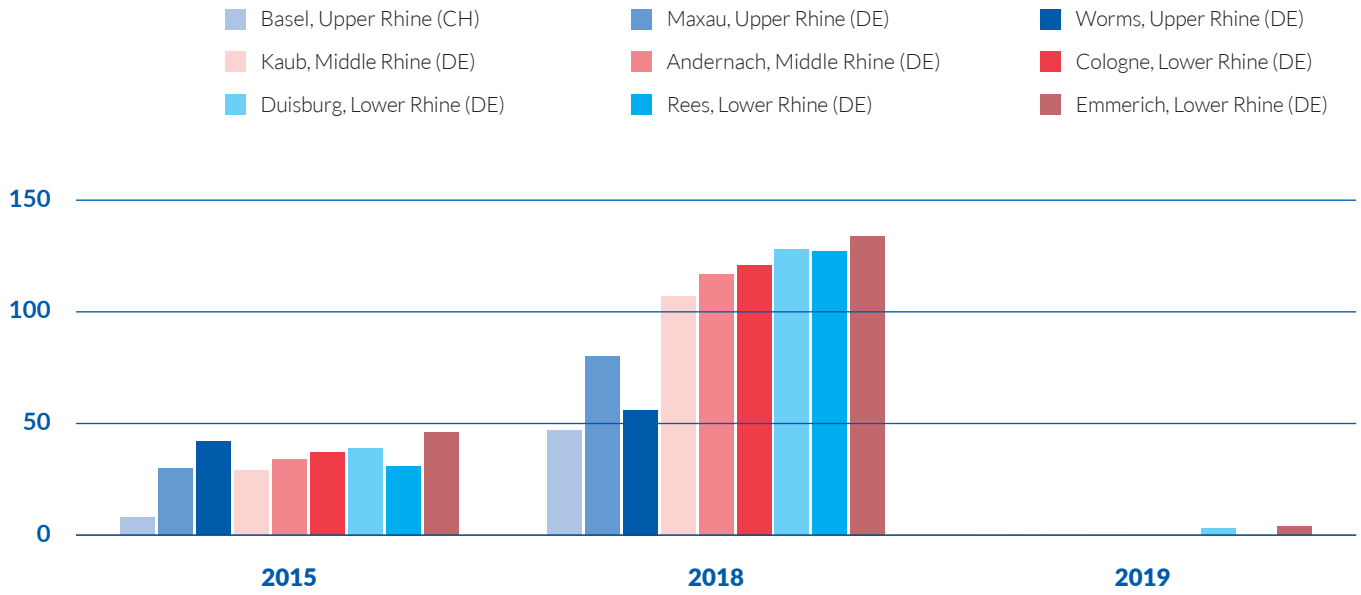
FIGURE 5: **NUMBER OF DAYS BELOW THE LOW NAVIGABLE WATER LEVEL FOR DANUBE GAUGING STATIONS**



Sources: Danube Commission market observation; CCNR based on data from the German Federal Waterways and Shipping Administration, provided by the Federal Institute of Hydrology (BfG); Federal State of Lower Austria

In the following figure, nine gauging stations along the Rhine were also ordered in a geographical way, as well as in a downstream direction (which, for the Rhine, is south to north). The figure shows that 2019 did not have any severe low water situations on the Rhine, compared to the Danube. In addition, as a general tendency, the frequency of severe low water days is higher for gauging stations on the Lower and Middle Rhine than on the Upper Rhine.

FIGURE 6: **NUMBER OF DAYS BELOW THE EQUIVALENT WATER LEVEL FOR RHINE GAUGING STATIONS**



Source: CCNR based on data from the German Federal Waterways and Shipping Administration, provided by the Federal Institute of Hydrology (BfG)

FREIGHT RATES IN THE RHINE REGION

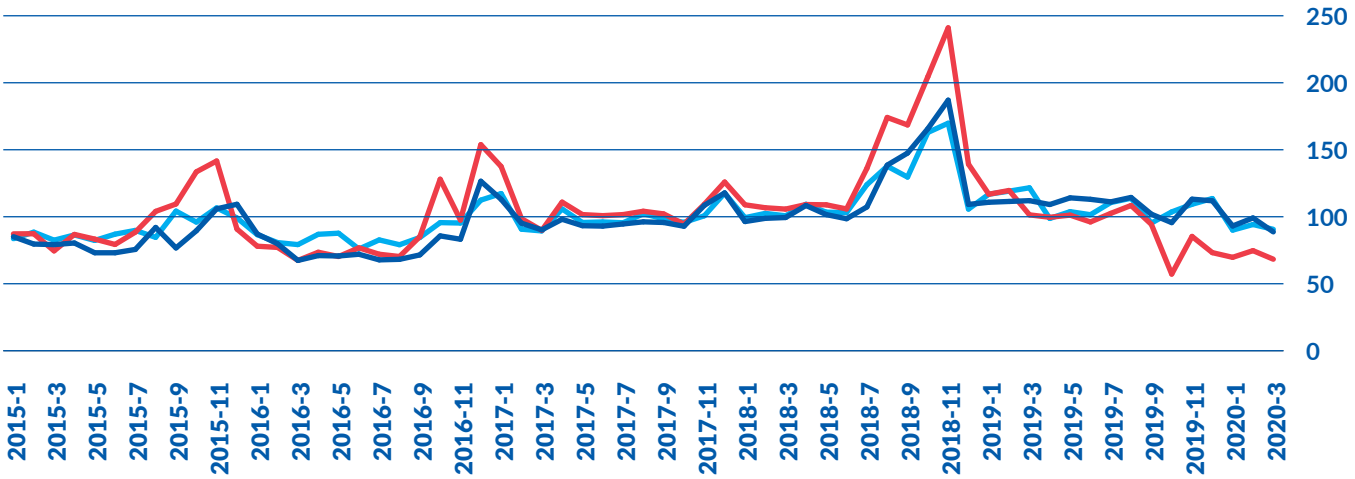
Freight rates for the transport of dry cargo remained on a multiannual average level during large parts of 2019. In late 2019 and early 2020, freight rates for dry cargo on the Lower and Middle Rhine dropped significantly. A major reason for this was hydraulicity conditions, which were characterised by high water levels at the end of 2019 and the beginning of 2020 (see figures above). Another reason was the cooling off in the overall economic situation, which reduced transport demand and freight rates. This is especially seen for the Lower Rhine, where the reduction in coal and iron ore transport had a strongly negative effect on freight rates.

Domestic transport in the Netherlands

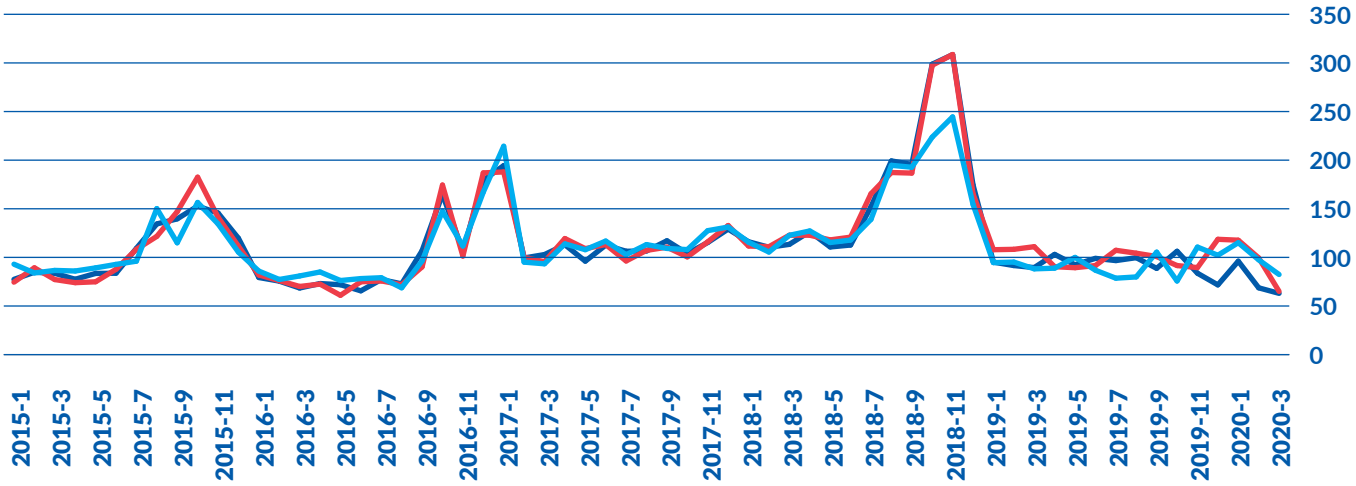
Lower Rhine

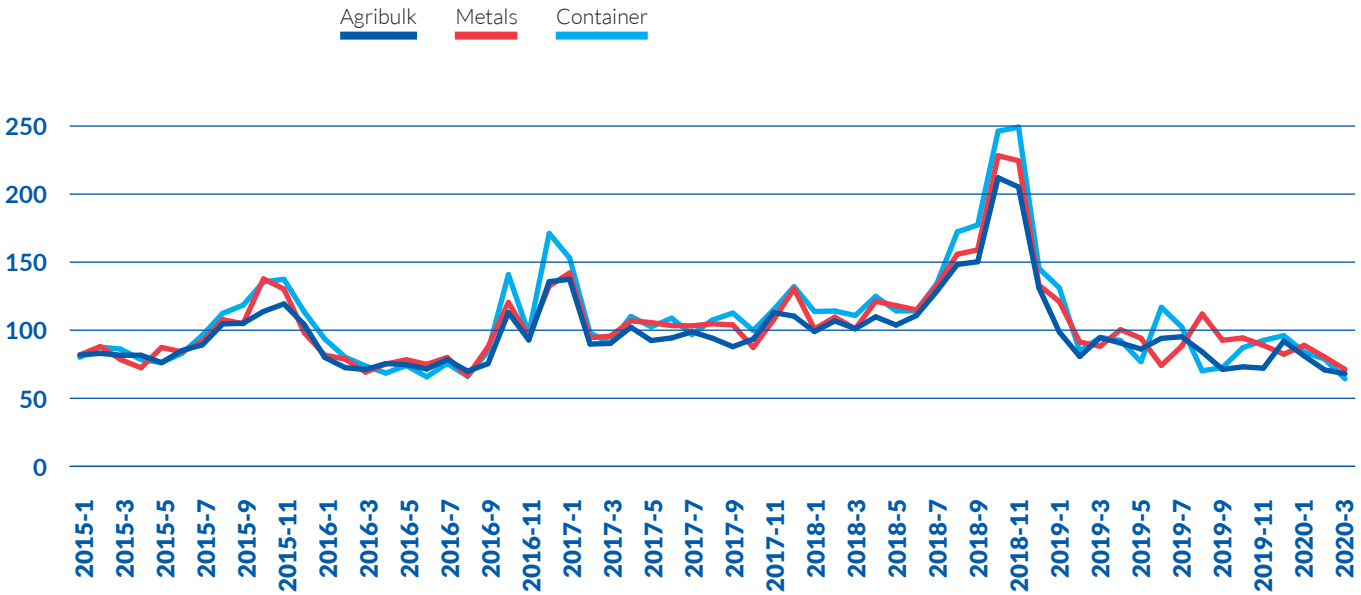
Mittelland Canal

FIGURES 7, 8 AND 9: **PANTEIA FREIGHT RATE INDEX FOR DRY CARGO TRANSPORT IN THE RHINE AREA** (INDEX 2015 = 100)



Middle Rhine Upper Rhine Moselle

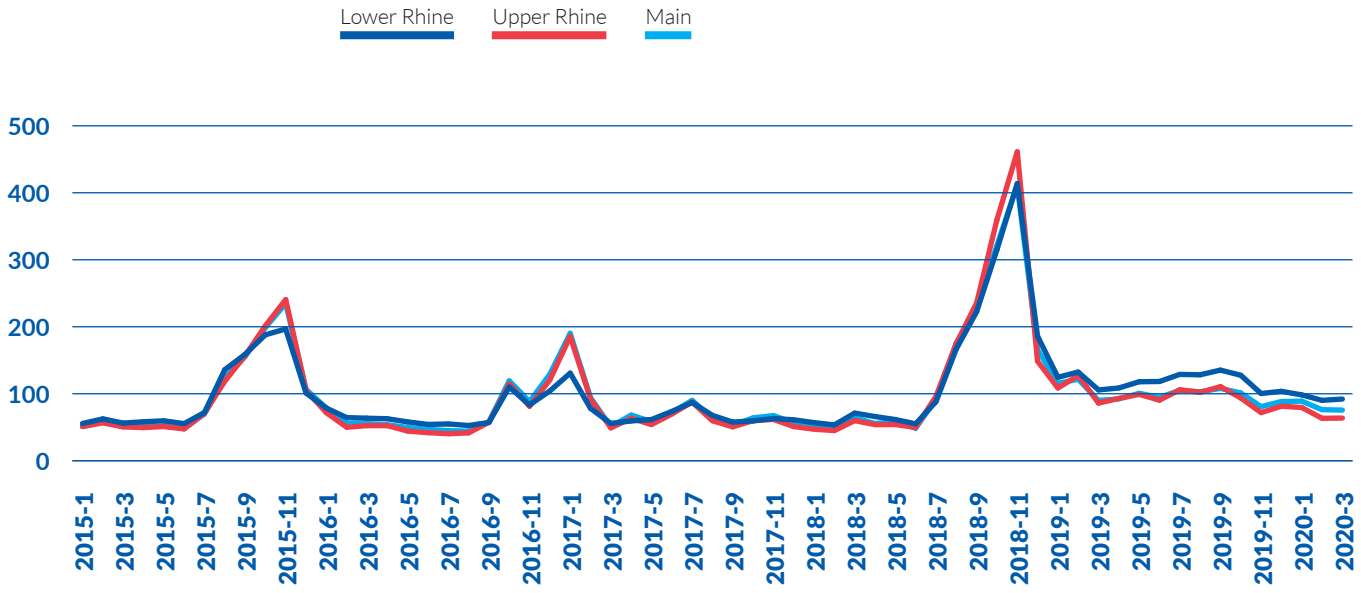




Source: Panteia

Spot market freight rates for the transport of liquid cargo (gasoil) from the ARA region to destinations along the Rhine in France, Germany and Switzerland were also on a downward path at the end of 2019 and at the beginning of 2020.

FIGURE 10: **PJK FREIGHT RATE INDEX FOR GASOIL FROM THE ARA REGION TO DESTINATIONS ALONG THE RHINE** (INDEX 2015 = 100)



Source: CCNR calculation based on PJK International

** Gasoil. PJK collects freight rates (in Euro per tonne) for ARA-Rhine trade of liquid bulk. The CCNR transforms these values into an index with base year 2015. Lower Rhine: Duisburg, Cologne. Upper Rhine: Karlsruhe, Basel. Main: Frankfurt/M.*

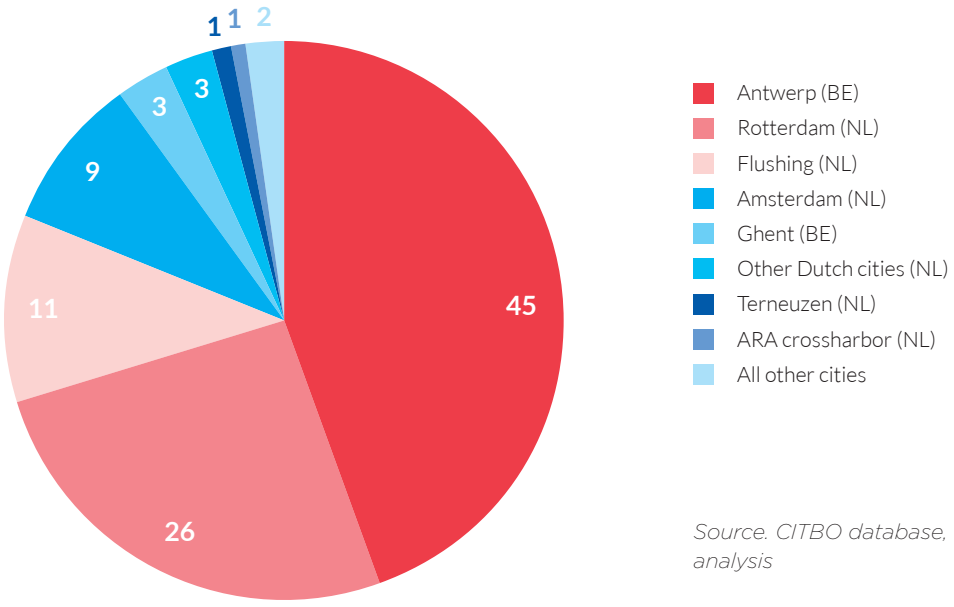
FREIGHT RATES IN THE FARAG REGION

(FLUSHING, ANTWERP, ROTTERDAM, AMSTERDAM, GHENT, TERNEUZEN)

For the liquid cargo transport within the extended ARA region, a dataset on spot market freight rates and time charter renting prices provided by the tanker barge corporation CITBO was analysed. Within the spot market data, gasoil and components had a share of 50% in 2019, compared to 47% in 2018. Gasoline and components followed on rank 2 with 26% (35 % in 2018), biodiesel on rank 3 with 15% (11% in 2018), and chemicals on rank 4 with 9% (8% in 2018). Heavy and other products accounted for 1%.

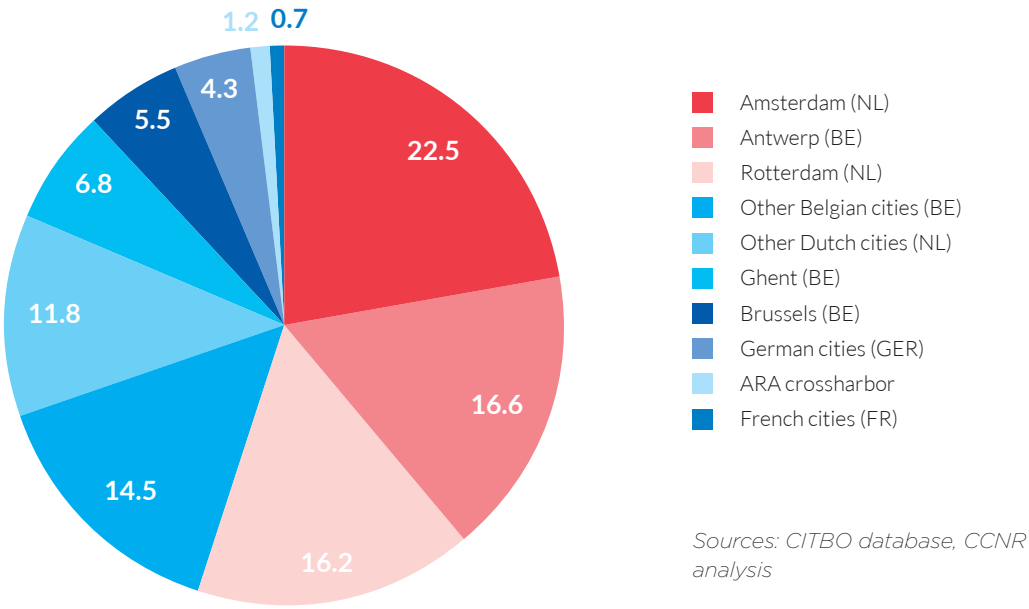
Regarding all liquid cargo transported in the period under study (July 2017 until April 2020), 94 % was loaded in Antwerp, Rotterdam, Flushing, Amsterdam, or Ghent. For the time charter data, the geographical scope is very similar. The ports of unloading of the cargo are more often outside the FARAG region. For example, 20% of the cargo was unloaded in Belgian cities/ports outside the FARAG region. Frequent destinations were Brussels (5.5%), Liège (3.8%), Roeselare (3.6%), Tessenderlo (2.6%) and Hasselt (2.1%). Destinations in Germany had a share of 4.3%.

FIGURE 11: **CITIES/PORTS OF LOADING WITHIN THE CITBO DATA** (SHARE IN %)



Source. CITBO database, CCNR analysis

FIGURE 12: **CITIES/PORTS OF UNLOADING WITHIN THE CITBO DATA** (SHARE IN %)

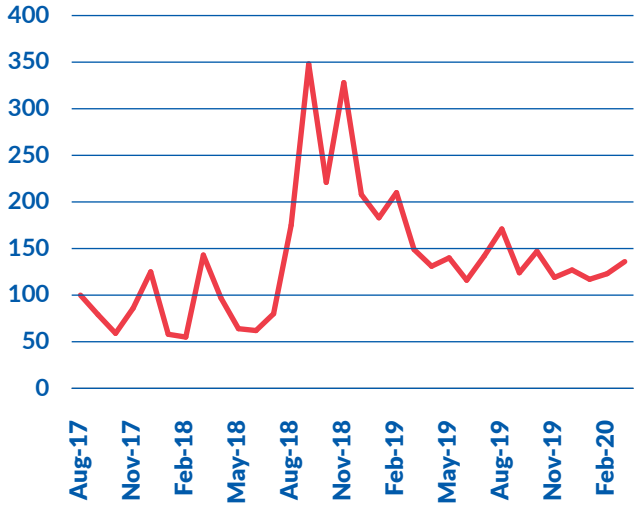


Sources: CITBO database, CCNR analysis

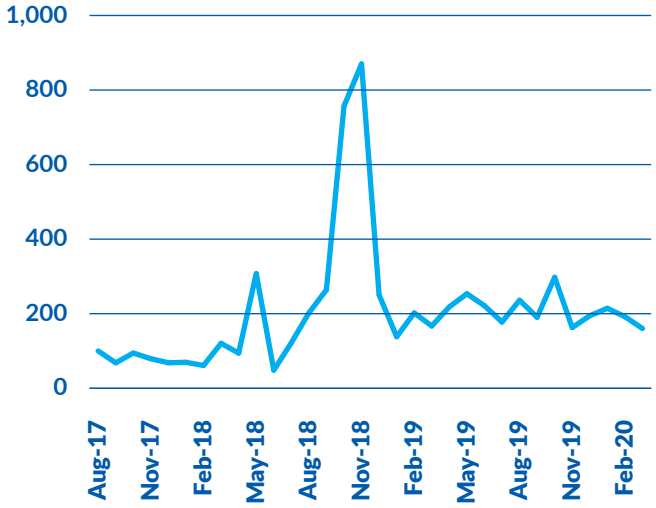
A freight rate index was calculated per product segment, based on the spot market freight rates. For all four cargo segments, freight rates peaked during the low-water period in 2018. When water levels recovered, freight rates abated but settled at a higher level than before.

FIGURES 13, 14, 15 AND 16: **CITBO FREIGHT RATE INDEX FOR LIQUID CARGO SEGMENTS** (INDEX AUGUST 2017 = 100)

Gasoil and components

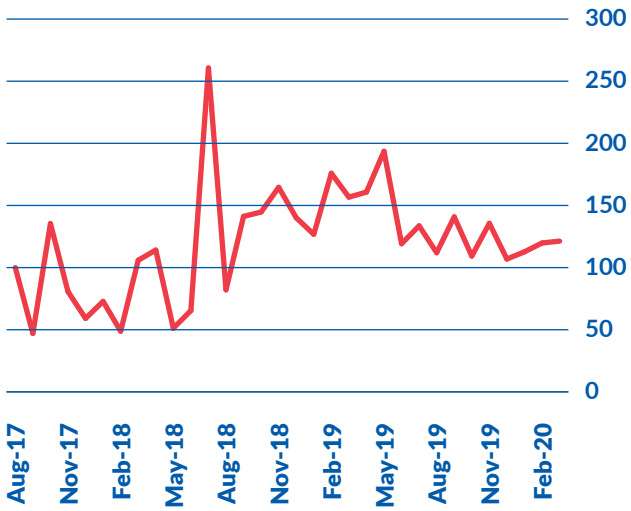


Gasoline and components

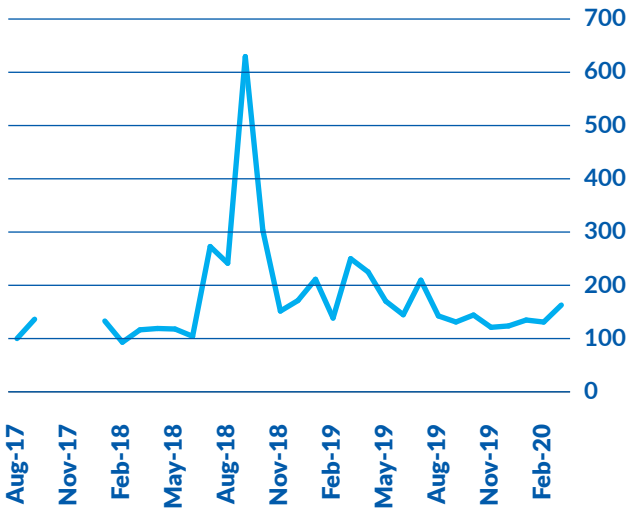


Source: CCNR analysis based on CITBO spot market freight rates

Biodiesel



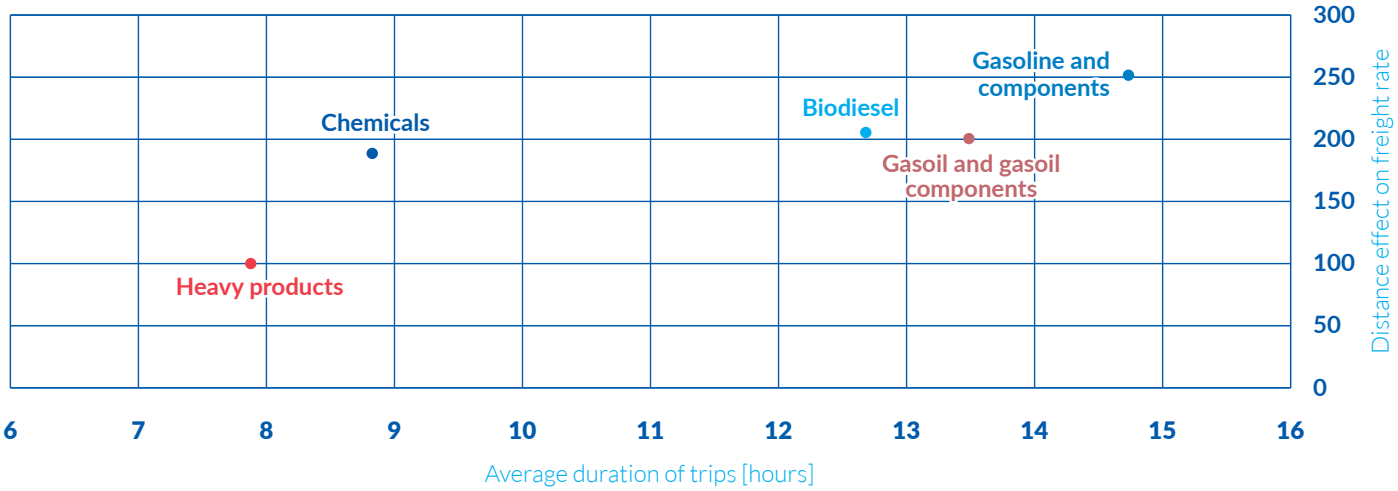
Chemicals



Source: CCNR analysis based on CITBO spot market freight rates

Gasoline and its components had the highest average spot market freight rates in absolute terms (€/tonne) as these trips are on average relatively long. Destinations outside the FARAG region (e.g. cities in Germany such as Cologne, Frankfurt/Main, Karlsruhe or Basel in Switzerland) are more frequently observed for gasoline (and gasoil) than for chemicals. During the return trip of long-distance journeys, vessels are often empty. To compensate this empty return trip and related costs, a compensation in terms of a higher freight rate is paid. The following figure shows this distance effect where the average trip length is seen on the x-axis, and the distance effect on the y-axis.

FIGURE 17: **AVERAGE DURATION OF TRIPS AND DISTANCE EFFECT ON SPOT MARKET RATE IN THE CITBO DATABASE***

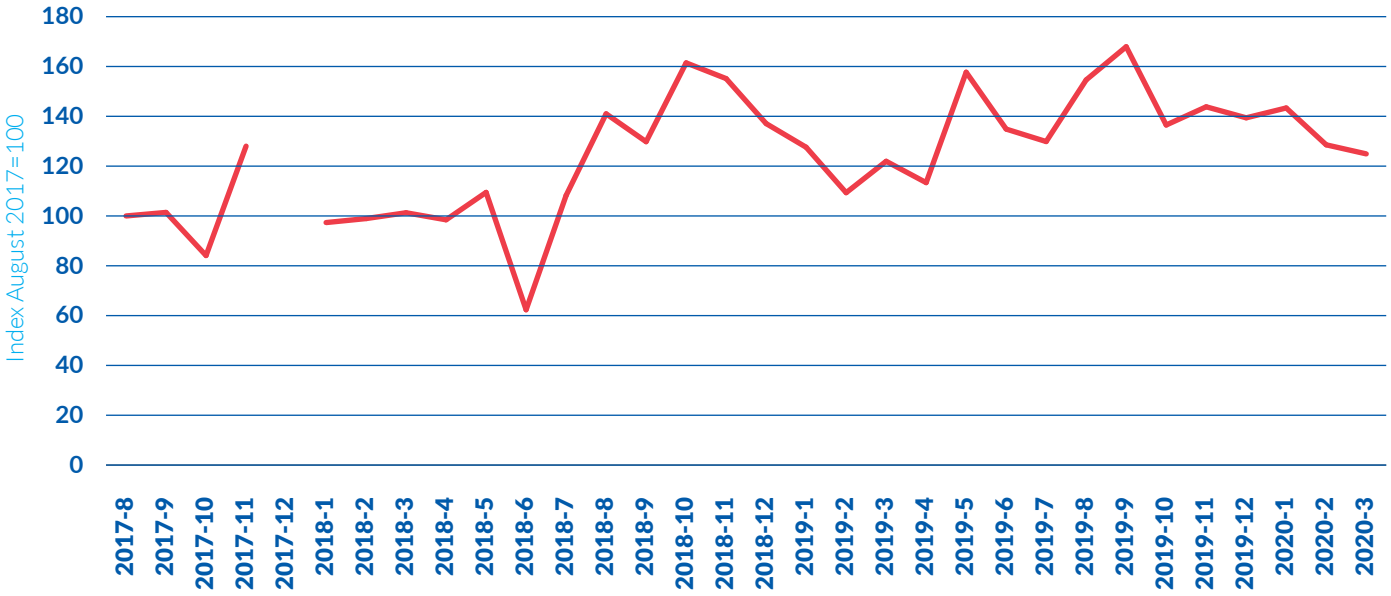


Source: CCNR analysis based on CITBO spot market freight rates

** The distance effect is measured as the ratio of average freight rates per product group and the freight rate for heavy products (heavy products equalling 100).*

As expected, the time charter rates evolved in a less volatile way over time than the spot market rates. But there was also a peak during the low-water period in October 2018, therefore the time charter rates followed the spot market rates to a certain extent. The general movement of the curve reflects an upward trend from August 2017 until September 2019, which was also influenced by variations due to the low-water period. Since September 2019, however, renting prices followed a decreasing trend.

FIGURE 18: **AVERAGE MONTHLY RENTING PRICE WITHIN TIME CHARTER DATA IN THE CITBO DATABASE** (INDEX)



Source: CCNR analysis based on CITBO data

On the Danube, freight rates are above all dependent upon bunker fuel prices which, according to the market observation of the Danube Commission, decreased by 4.2% on the Danube in 2019, compared to the average price in 2018. Freight rates for upstream transport (which are in general higher) therefore eased slightly in 2019 (by around 2%). Freight rates for downstream transport eased a little more (by around 4.5%), which also reflects the less dynamic increase in cargo transported downstream compared to strong growth in upstream traffic (iron ore, foodstuffs).

04

INLAND WATERWAY TRAFFIC IN PORTS

- In 2019, river traffic increased in the seaports of Antwerp, Hamburg and Constanța while it remained at similar levels as the previous year in the port of Rotterdam and North Sea Port.
- The largest European inland port, Duisburg, recorded a 0.6% reduction in inland water traffic, due to losses in the transport of coal, steel and iron ore. The second largest, Paris, recorded a 14.6% increase, mainly driven by the transport of sands, stones and construction materials.
- A total of 2.1 million tonnes of goods were loaded or unloaded by inland vessels in the main ports from the Sava river basin in 2019. In this region, Serbia is the country where inland waterway traffic is the highest.

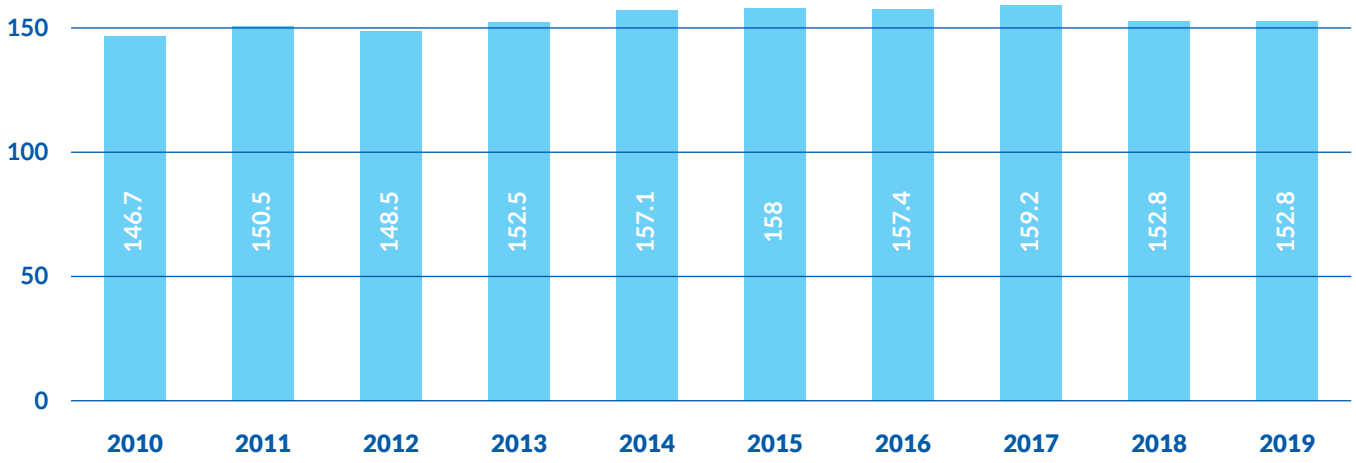
INLAND WATERWAY TRAFFIC
IN MAIN EUROPEAN SEAPORTS

Sources: Port Statistics, Eurostat [iww_go_aport], Panteia, CBS

**North Sea Port is the name of the port formed by the cross-border merger between Zeeland Seaports (Flushing, Borsele and Terneuzen) in the Netherlands and Ghent Port Company in Belgium, signed on 8 December 2017. The cross-border merger port started to operate on 1 January 2018.*

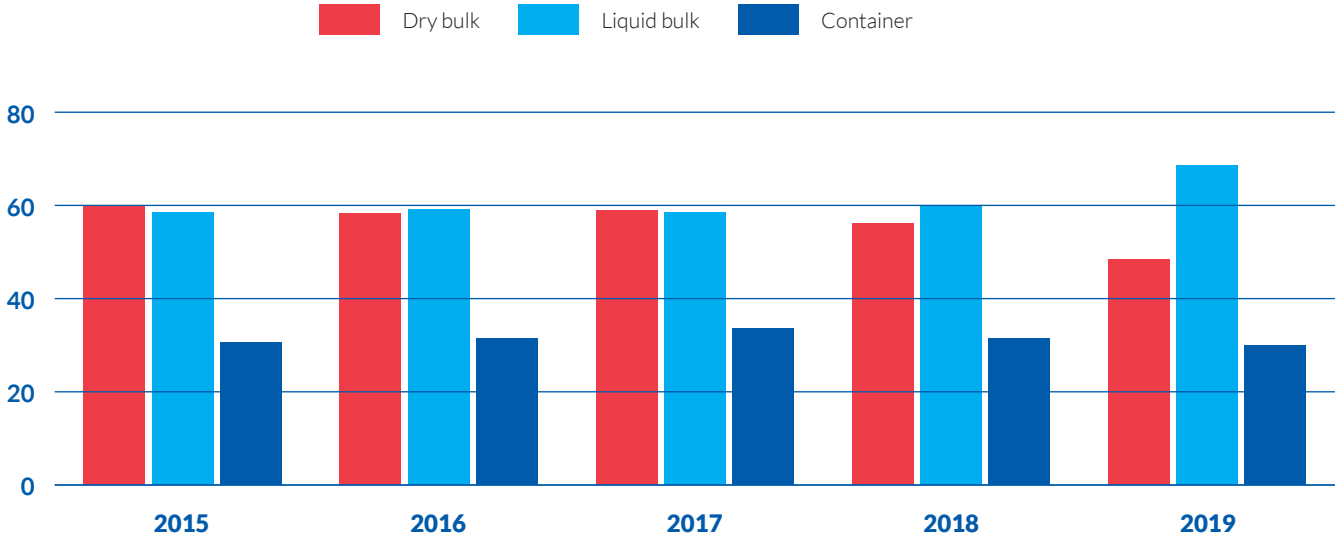
In **Rotterdam**, the largest European seaport, 85,969 inland vessels visited the port in 2019 (compared to 123,859 in 2018). Rotterdam remains the market leader in the Hamburg-Le Havre range by total maritime cargo throughput as it holds 36.4% of market shares, followed by Antwerp (18.4%), Hamburg (10.7%) and Amsterdam (8.3%)[17]. Although the volume of loaded or unloaded IWT cargo at the port of Rotterdam was 152.8 million tonnes in 2019, and therefore on the same level as in 2018, important differences can be seen for dry and liquid cargo. The liquid cargo segment increased by 15%, while the dry cargo segment decreased by 14%. Container transport decreased by 5%. For both, outgoing traffic plays an important role at the port (almost 88% for dry cargo and 65% for liquid cargo).

FIGURE 1: **INLAND WATERWAY TRAFFIC IN THE SEAPORT OF ROTTERDAM** (MILLION TONNES)



Source: Port of Rotterdam

FIGURE 2: **INLAND WATERWAY TRAFFIC IN THE SEAPORT OF ROTTERDAM PER CARGO SEGMENT** (MILLION TONNES) *



Sources: Port of Rotterdam, CBS
** General cargo is not taken into account in these calculations.*

[17] *Port of Rotterdam annual report 2019*

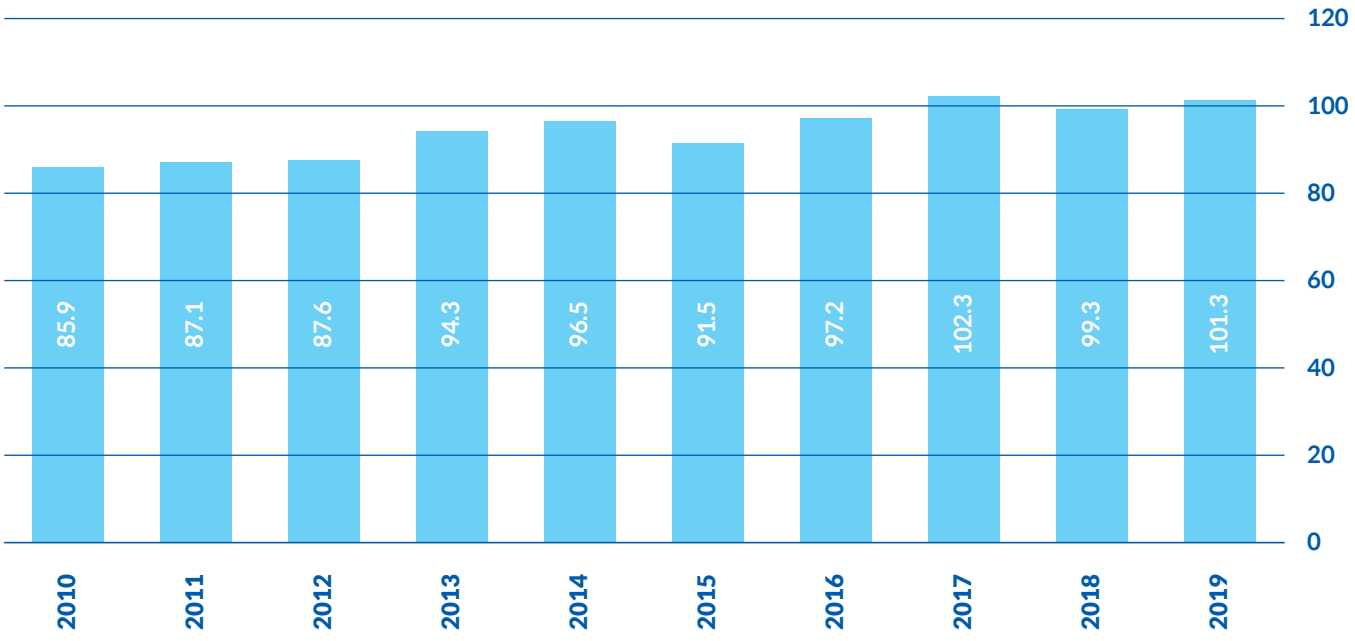
In 2019, major investments were related to the construction of the Container Exchange Route (CER), the energy transition and digitisation.[18] Nextlogic, the project which will make incoming container transport by barge more predictable and transhipment processes more efficient, is expected to be up and running in the course of 2020.

In **Antwerp**, 56,585 inland vessels frequented the port in 2019 (compared to 59,724 in 2018). The IWT goods traffic at the port of Antwerp increased in 2019, to reach a volume of 101.3 million tonnes of goods transported via inland navigation (compared to 99.3 in 2018). The share of imports increased slightly while exports remained stable.

This positive evolution in 2019 was mainly driven by an increase in transport of chemicals (+4.6%), which remains the most important segment for the port of Antwerp together with petroleum products. The two segments make up more than half of the total river traffic at the port.

Containers come close behind with a share of 25% of total river traffic and continue to follow a slightly increasing trend. While volumes of fertilizers, foodstuffs, animal fodder, agricultural products and live animals continued to follow an upward trend (+11%), volumes of iron ores, metal ware and metal wastes decreased (-14%). In 2019, the modal split within hinterland traffic was the following: road: 47%, barge: 44,7% and rail: 8,4% (compared to the following figures in 2018, road: 42%, barge: 46% and rail: 12%)[19].

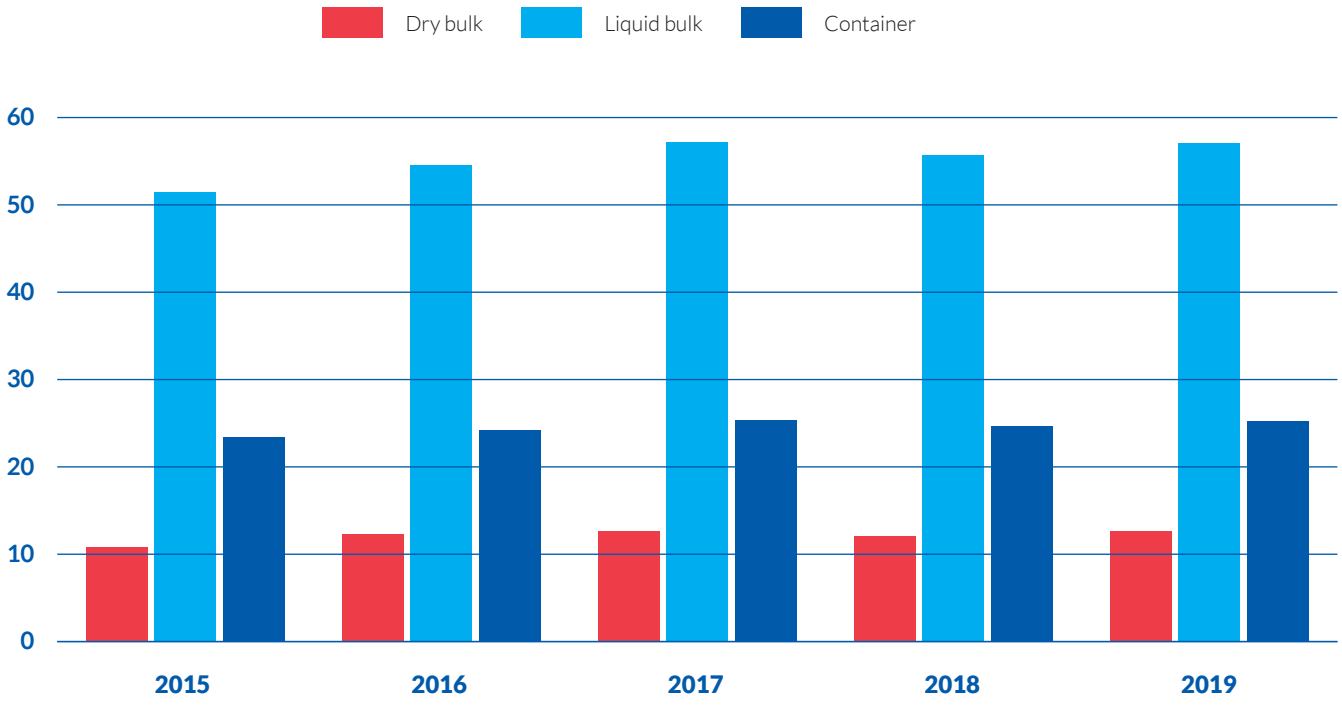
FIGURE 3: **INLAND WATERWAY TRAFFIC IN THE SEAPORT OF ANTWERP** (MILLION TONNES)



Source: Port of Antwerp

[18] *Port of Rotterdam Authority, annual report 2019*
[19] *New methodology implemented by the port for calculation of modal split data which led to an increase in modal split share for rail and IWT against road (with previous method, modal split figures in 2018 were the following: road: 56%, barge: 36% and rail: 8%).*

FIGURE 4: **INLAND WATERWAY TRAFFIC IN THE SEAPORT OF ANTWERP PER CARGO SEGMENT** (MILLION TONNES) *



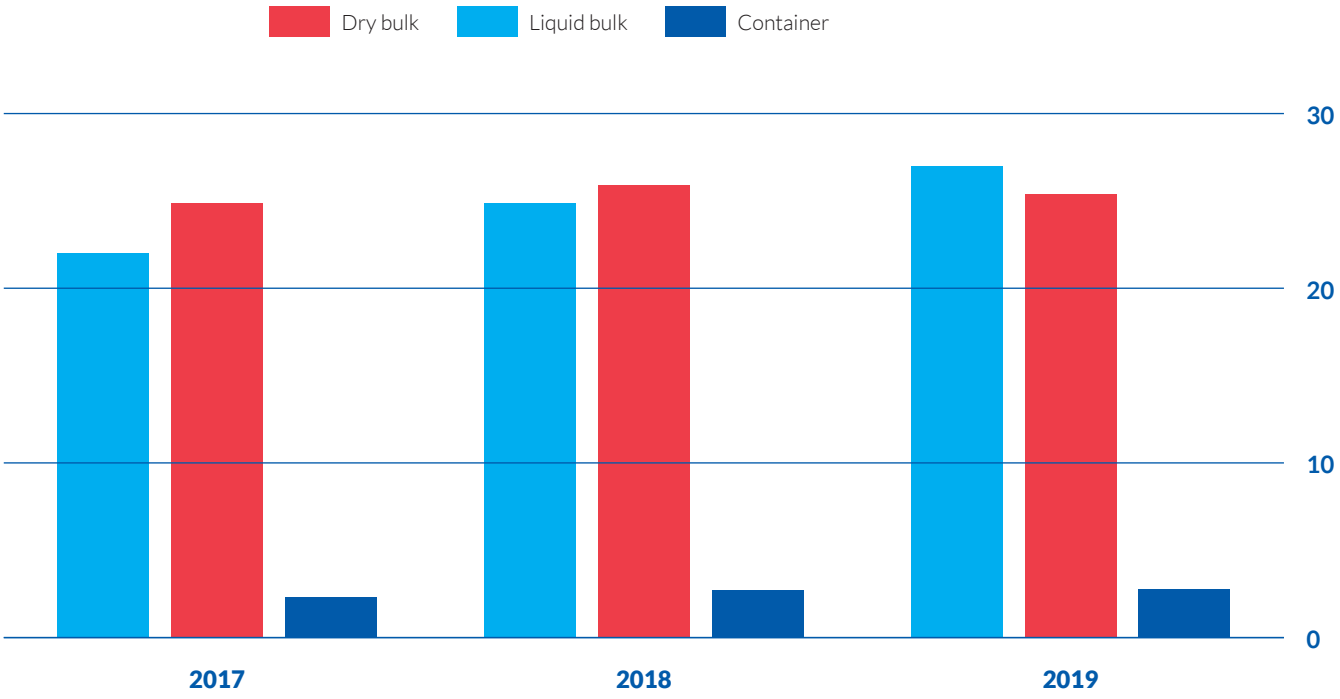
Source: Port of Antwerp
** Ro/ro, general and not assigned goods are not taken into account in these calculations (in 2019, the volume transported for these three cargo types amounted to 6.2 million tonnes, mostly attributed to conventional goods).*

In the **North Sea Port (Ghent, Terneuzen, Borsele, Flushing),** total river traffic amounted to 58.5 million tonnes in 2019, a stable figure compared to 2018. In 2019, over 47,000 inland vessels entered North Sea Port to load and unload (around 40,000 in 2018).

North Sea Port is mostly a bulk port (both dry and liquid), the most important market segments being petroleum, mineral oil products as well as ores, food products and fertilizers.

54% of the goods are transported to the hinterland by means of inland waterway transport. The Port wishes to increase the modal share of inland navigation, particularly for the transport of containers, a segment where great efforts are being deployed. In addition, there is a growing market for parties who 'bundle' containers before they are transported to other ports by barge. The port is also looking forward to the realisation of the Seine-Scheldt project, which will allow inland vessels with a load capacity of 4,500 tonnes to travel up to Paris.

FIGURE 5: **INLAND WATERWAY TRAFFIC IN THE NORTH SEA PORT** (MILLION TONNES) *



Source: North Sea Port
** Ro/ro and conventional cargo are not taken into account in these calculations (in 2019, the volume transported for these two cargo types amounted to 3.3 million tonnes, mostly attributed to conventional cargo).*

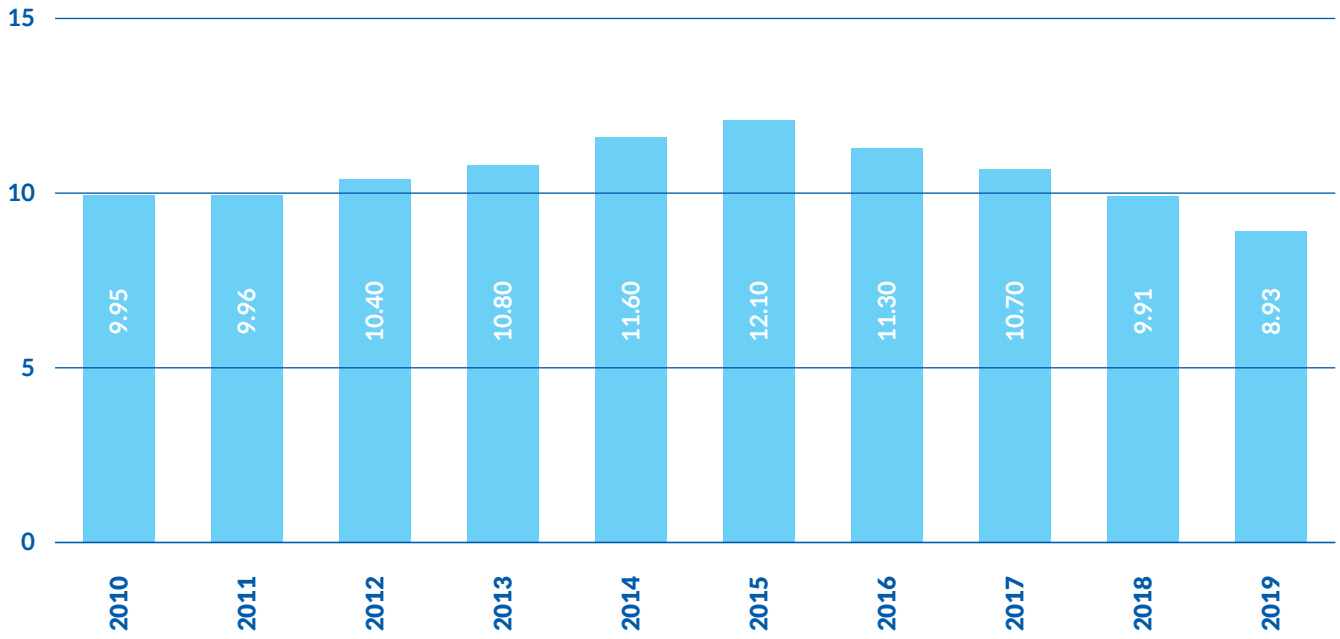
Volumes transported by IWT decreased by 9.8% in 2019 compared to 2018 in the port of **Hamburg**. This decline is mainly driven by the negative results for dry cargo, in particular coal. One reason for this decrease is the shift away from coal as a source of electricity generation in Germany. Overall, both dry and liquid cargo have been following a decreasing trend since 2015.

However, the situation is more positive for container transport. Contrary to the overall decline of 4.1% registered in Germany, an increase of 13% in container transport by inland vessels, with 145,078 TEU in 2019, has been recorded at the Port[20].

Hinterland traffic (all modes) increased by 7.4% between 2018 and 2019. Within this hinterland traffic, inland waterway transport lost market shares to rail. It had a share of 9.2% in 2019, compared to 10.1% in 2018, while rail transport's modal share was 49.4% (compared to 47.1% in 2018). The road modal split share decreased from 42.8% to 41.4%. Incoming river traffic has a share of 47% in Hamburg and 53% is outgoing traffic.

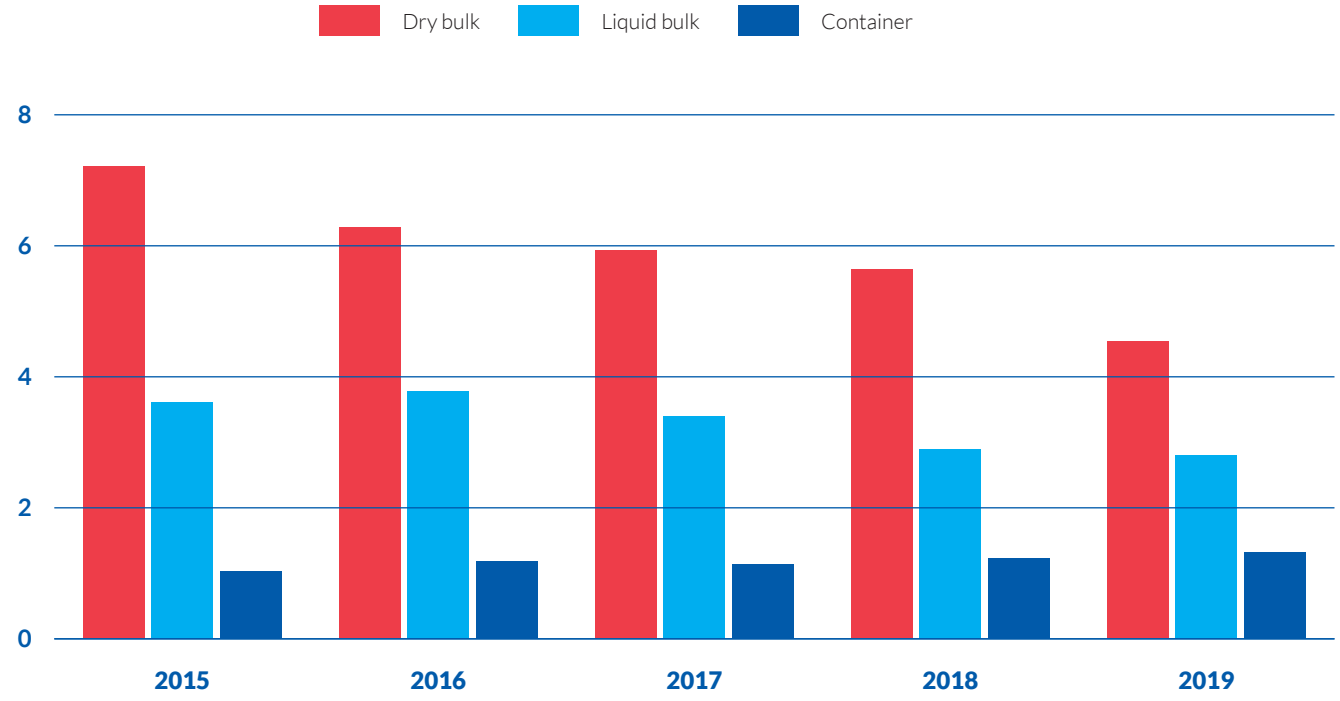
[20] Port of Hamburg press release "Container shipping into the hinterland on a good track". This figure does not include the increased intra-port transhipment by barges in the Port of Hamburg.

FIGURE 6: **INLAND WATERWAY TRAFFIC IN THE SEAPORT OF HAMBURG** (MILLION TONNES)

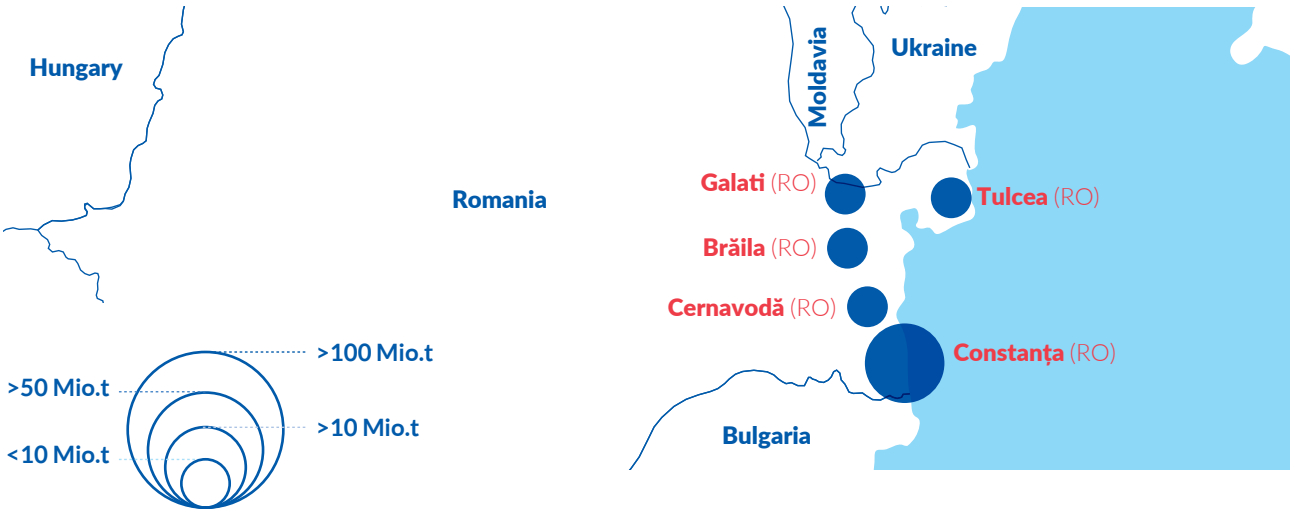


Source: Statistical Office of Hamburg

FIGURE 7: **INLAND WATERWAY TRAFFIC IN THE SEAPORT OF HAMBURG PER CARGO SEGMENT** (MILLION TONNES) *



Source: Statistical Office of Hamburg
** General cargo is not taken into account in these calculations.*



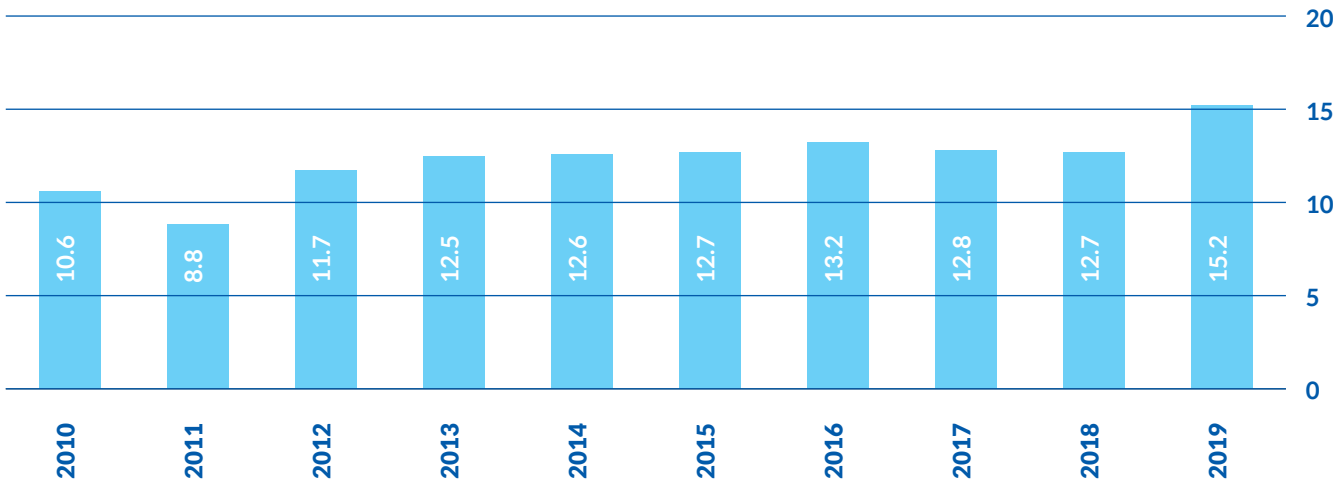
Source: Romanian national Institute of Statistics

In **Constanța**, 10,395 inland vessels called at the port in 2019. River traffic increased by almost 20%, to reach 15.1 million tonnes, mainly driven by an increase in transport of agricultural products, in particular cereals, iron ore and chemical products.

Mainly dry cargo is transported in the port of Constanța, with a high share of 90.7% of the total goods transport. Dry cargo volumes rose by 20.8% compared to 2018. Liquid cargo represents 5.6% of total goods transport. Container, Ro/ro and general cargo amounted to 507 thousand tonnes in 2019, mostly attributed to general cargo. Indeed, container traffic in the port of Constanța remains relatively low and consisted in 1,761 TEU in 2019.

International transport represents 56.2% of total river traffic. Constanța is the seaport where the most river traffic is registered in Romania, before Galati, Cernavoda, Tulcea and Braila.

FIGURE 8: **INLAND WATERWAY TRAFFIC IN THE SEAPORT OF CONSTANȚA**
(MILLION TONNES)



Source: Port of Constanța/Romanian Statistical Office

INLAND WATERWAY TRAFFIC
IN MAIN EUROPEAN INLAND PORTS

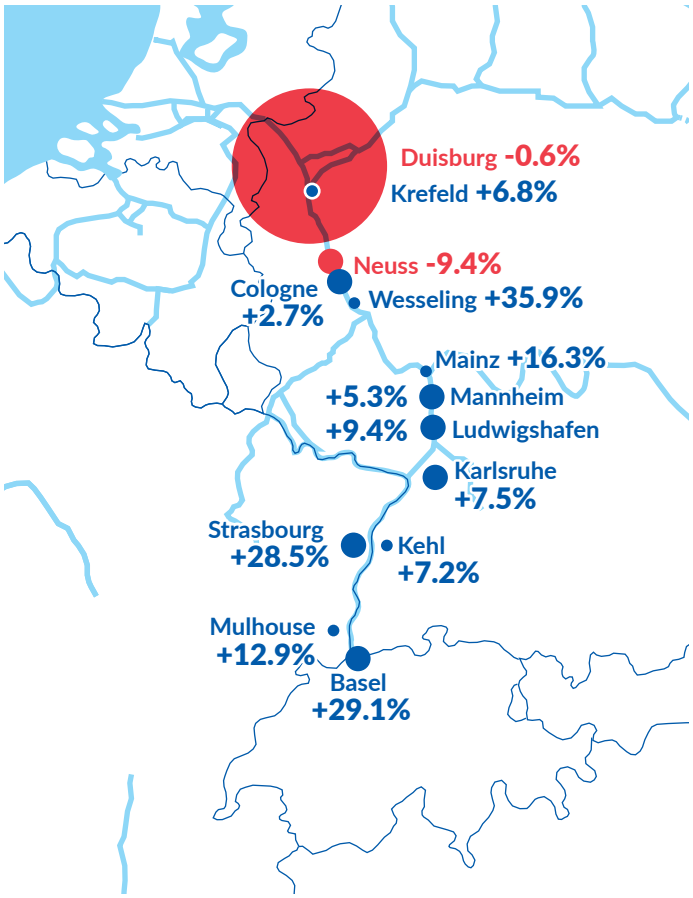
RHINE PORTS

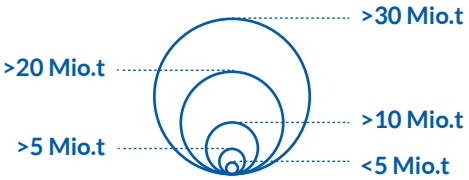
TABLE 1: **WATERSIDE TRAFFIC IN MAJOR RHINE PORTS** (MILLION TONNES)

	2017	2018	2019	2019/2018
Duisburg	52.2	48.1	47.8	-0.6%
Cologne	10.7	8.9	9.1	+2.7%
Mannheim	9.7	7.5	7.9	+5.3%
Strasbourg	8.0	5.9	7.5	+28.5%
Neuss	8.0	7.6	6.9	-9.4%
Karlsruhe	7.2	6.4	6.9	+7.5%
Ludwigshafen	5.6	6.1	6.6	+9.4%
Basel	5.8	4.7	6.1	+29.1%
Mulhouse	4.8	4.4	4.9	+12.9%
Kehl	3.5	3.9	4.2	+7.2%
Mainz	2.9	3.2	3.7	+16.3%
Krefeld	3.4	3.3	3.6	+6.8%
Wesseling	2.6	2.0	2.7	+35.9%
Total	124.4	112.1	118.1	+5.4%

Sources: Destatis, Port de Strasbourg, Swiss Rhine ports, Port de Mulhouse. The "total" relates only to the ports mentioned in the table, not all Rhine ports.

TOTAL YEARLY WATERSIDE TRAFFIC (MILLION TONNES)





Negative rate of change in 2019 vs 2018

Positive rate of change in 2019 vs 2018

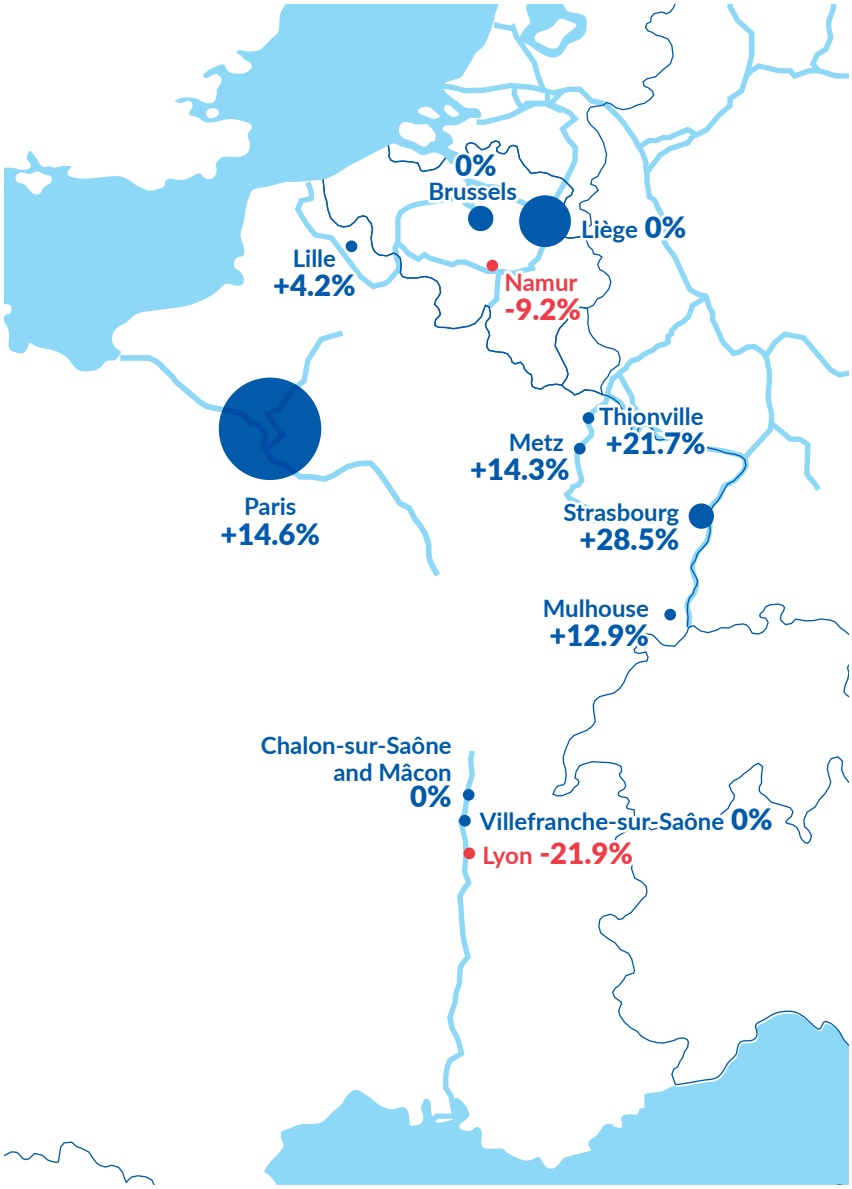
FRENCH AND BELGIAN PORTS

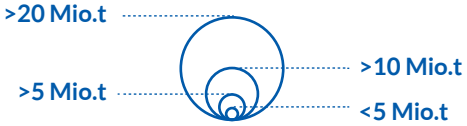
TABLE 2: **WATERSIDE TRAFFIC IN MAJOR FRENCH AND BELGIAN PORTS**
(MILLION TONNES)

	2017	2018	2019	2019/2018
Paris	21.2	22.1	25.3	+14.6%
Liège	15.9	16.0	16.0	0%
Strasbourg	8.0	5.9	7.5	+28.5%
Brussels	4.8	5.2	5.2	0%
Mulhouse	4.8	4.4	4.9	+12.9%
Namur	5.3	5.1	4.6	-9.2%
Metz	1.6	1.9	2.2	+14.3%
Lille	1.8	1.8	1.9	+4.2%
Lyon	1.5	1.4	1.1	-21.9%
Villefranche-sur-Saône	0.8	0.8	0.8	0%
Chalon-sur-Saône and Mâcon	1.1	0.8	0.8	0%
Thionville	0.6	0.6	0.7	+21.7%
Total	67.4	66.0	70.9	+7.4%

Sources: Ports de Paris, Port de Liège, Port de Strasbourg, Port de Mulhouse, Port de Bruxelles, Port de Namur, Nouveau port de Metz, Port de Lille, VNF. The "total" relates only to the ports mentioned in the table, and not to all French and Belgian inland ports.

TOTAL YEARLY WATERSIDE TRAFFIC (MILLION TONNES)





Negative rate of change in 2019 vs 2018

Positive rate of change in 2019 vs 2018

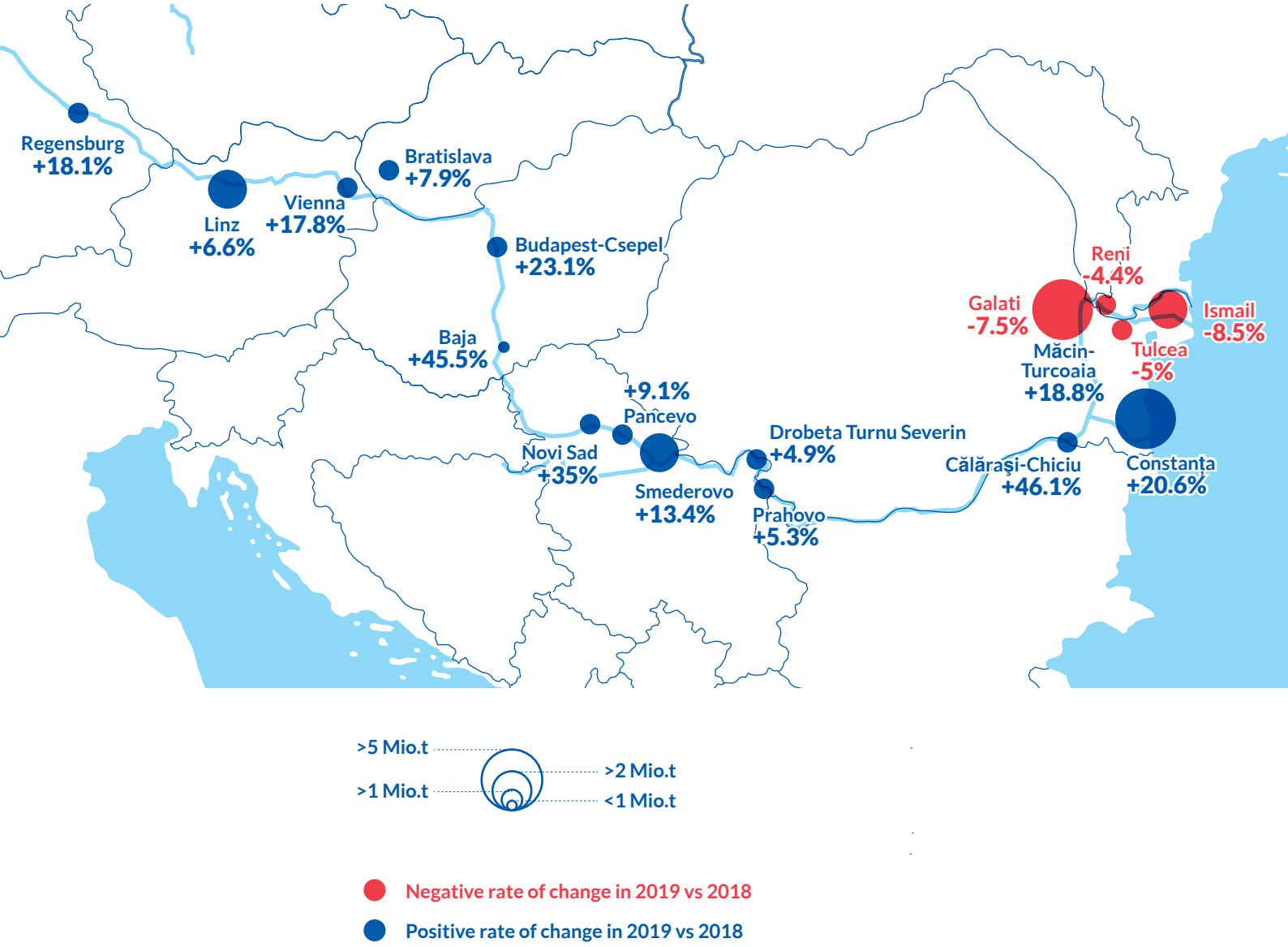
DANUBE PORTS

TABLE 3: **WATERSIDE TRAFFIC IN LARGE DANUBE PORTS** (MILLION TONNES)

	2017	2018	2019	2019/2018
Constanța	12.1	12.1	14.5	+20.6%
Galati	6.3	6.4	5.9	-7.5%
Ismail	5.1	4.7	4.3	-8.5%
Smederovo	3.2	3.6	4.0	+13.4%
Linz	4.2	3.2	3.4	+6.6%
Bratislava	2.1	1.5	1.7	+7.9%
Tulcea	1.3	1.7	1.6	-5.0%
Pancevo	1.1	1.4	1.5	+9.1%
Novi Sad	1.2	1.0	1.4	+35.0%
Regensburg	1.5	1.1	1.3	+18.1%
Reni	1.1	1.3	1.3	-4.4%
Vienna	1.1	1.0	1.2	+17.8%
Drobeta Turnu Severin	1.2	1.1	1.2	+4.9%
Călăraşi-Chiciu	0.7	0.7	1.1	+46.1%
Prahovo	0.9	1.0	1.1	+5.3%
Budapest-Csepel	1.1	0.9	1.1	+23.1%
Măcin-Turcoaia	0.8	0.8	0.9	+18.8%
Baja	0.6	0.3	0.5	+45.5%
Total	45.5	43.8	48.0	+9.6%

Sources: Danube Commission market observation, Romanian Statistical Institute, Hungarian Statistical Office, Destatis, Statistik Austria, Port Governance Agency of Serbia. The "total" relates only to the ports mentioned in the table and not all Danube ports. The total waterside traffic of the Danube ports in 2019 amounted to 69 million tonnes (+13% compared to 2018).

TOTAL YEARLY WATERSIDE TRAFFIC (MILLION TONNES)



SAVA PORTS

TABLE 4: **WATERSIDE TRAFFIC IN MAJOR SAVA PORTS** (IN THOUSAND TONNES)*

	2017	2018	2019	2019/2018
Other transhipment places (Serbia)	-	682	949	+39%
Sremska Mitrovica (Serbia)	189	234	560	+139%
Slavonski Brod (Croatia)	117	131	199	+52%
Sabac (Serbia)	170	149	149	+/-0%
Brčko (Bosnia and Herzegovina - BaH)	136	98	125	+27%
Sisak (Croatia)	60	66	70	+6%
Oil refinery Brod (BaH)	9.7	29	8.1	-72%
Total	682	1,390	2,060	+48%

Source: Sava Commission
** In 2015, the port of Šamac in Bosnia and Herzegovina reported bankruptcy, therefore no transhipment of cargo recorded since then.*

TOTAL YEARLY WATERSIDE TRAFFIC (IN THOUSAND TONNES)

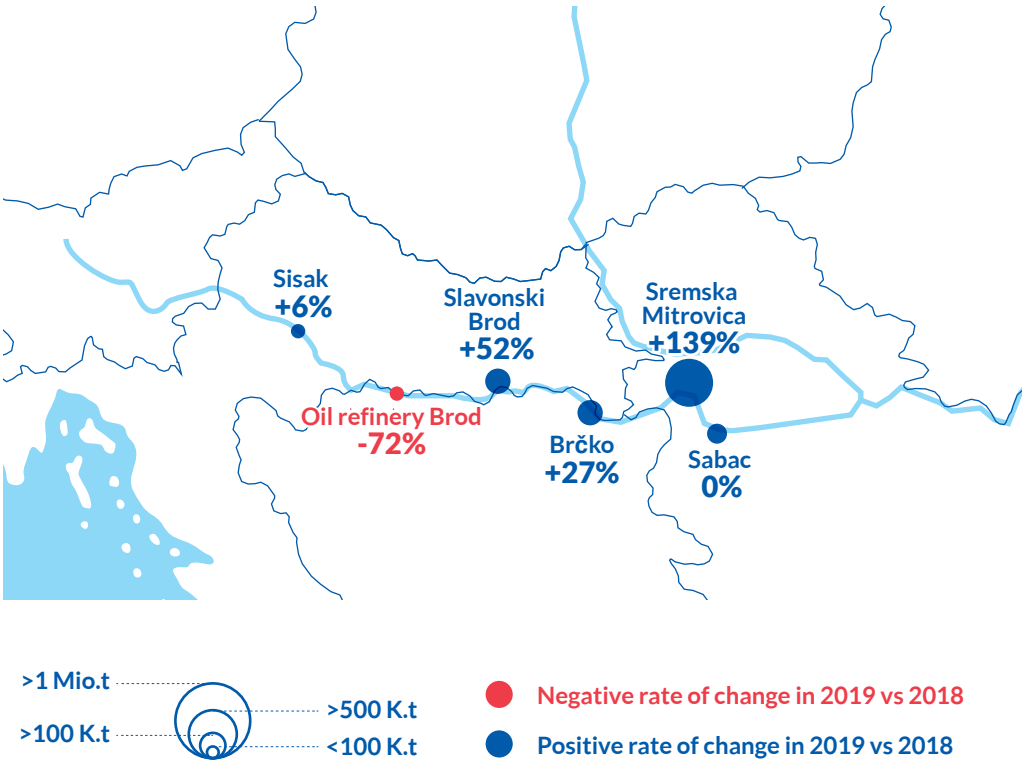
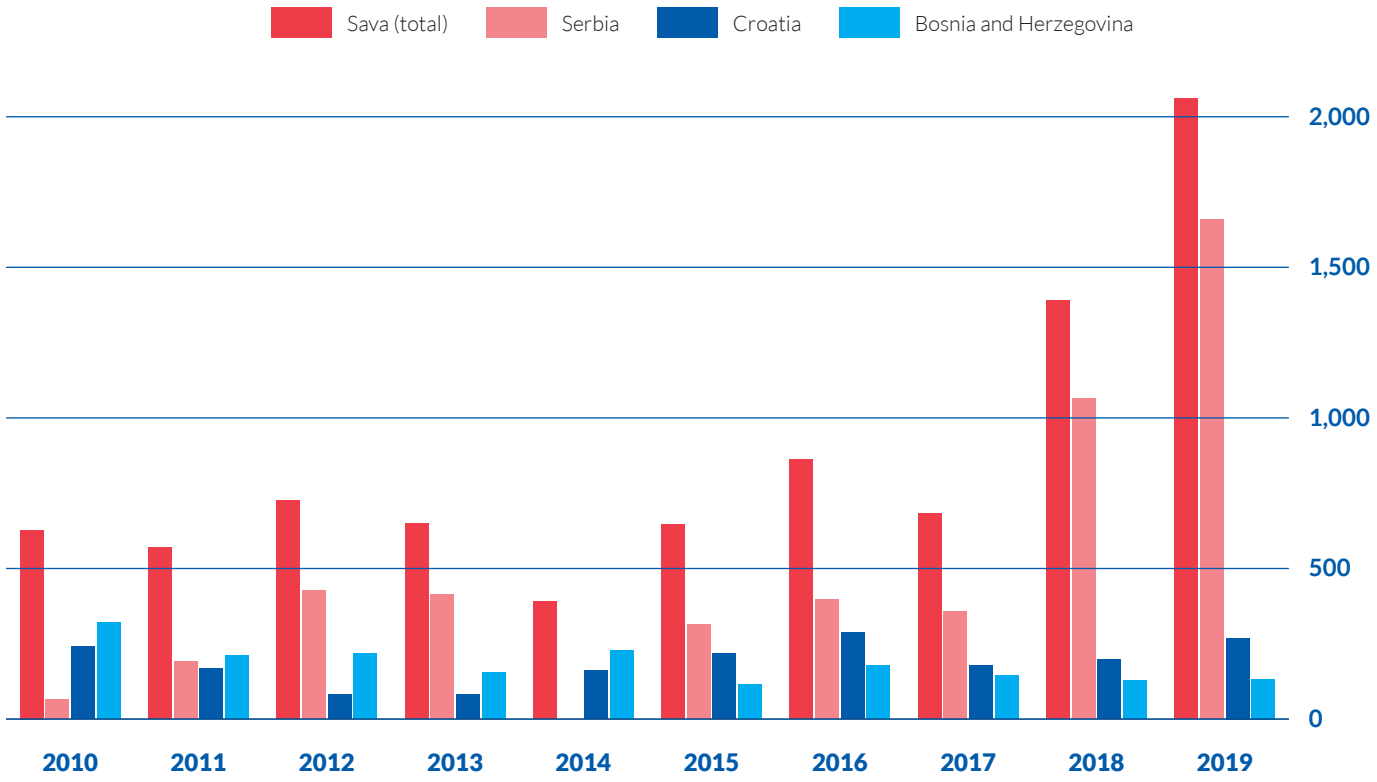


FIGURE 9: **EVOLUTION OF TRANSHIPPED GOODS IN THE SAVA RIVER BASIN IN TOTAL AND BROKEN DOWN PER COUNTRY OVER THE PERIOD 2010-2019** (THOUSAND TONNES) *



Source: Sava River Commission

** 2014: data for Serbia are missing (a great flood affected the whole basin in that year which may explain this data gap); first year when the Oil refinery in Brod started to operate and data were recorded; after 2015: no more data for port of Šamac; since 2018 and 2019, data for smaller transhipment places in Serbia started to be collected which explains the increasing amount of transhipped goods recorded in Serbia for those years.*

Serbia

- **Sremska Mitrovica/Port Leget** is a commercial company which administers the port area and focuses mainly on the exploitation of sediment from the Sava riverbed. Its activities are highly dependent on the demand from the construction sector, thereby registering a significant amount of goods such as gravel, sand and stone aggregates.
- **Šabac/Zorka industrial dock** was constructed by the one-time chemical industry giant Zorka and is mostly used by the industry basin in Šabac and Valjevo. Transhipment, mostly general and bulk cargo, is carried out at the Zorka industrial dock and to a lesser extent in the water area of Šabac Free Zone. Plans to increase its capacity are underway which should have a positive effect on the transport services market in the foreseeable future.
- Since 2018, the Agency for Ports of the Republic of Serbia has kept statistical records for other smaller transhipment places. In all these places, there is a significant increase in the overall transhipment, mainly building materials, oil products, coal and sediment dredged from the Sava river-bed and its tributaries.

Croatia

- In the last ten years, transhipment in the **Slavonski Brod Port** mostly involved crude oil and stone and, in smaller quantities, grain, sugar, and biofuels as well as some metal industry products and special types of cargo. In 2017, with co-funding from the EU, the Port Authority started works to create new or upgrade the existing waterside infrastructure, the road network and the container terminal (budget: 11 mio. EUR). In addition, announcements of major investments by Croatian Railways and other private investors have been made and negotiations are under way on long-term transport/transhipment contracts.

- **The Port of Sisak** (managed by the Sisak Port Authority) is the most upstream port on the Sava river, which has resulted in modest quantities of transhipped goods, mainly crude oil loaded in Slavonski Brod. It is heavily dependent on the hydrological conditions.

Bosnia and Herzegovina

Ports in Bosnia and Herzegovina expected and made plans for an increase in the quantities of transhipped goods. However, many factors such as slow economic growth and delays in the implementation of the project of the Sava river waterway rehabilitation also hindered such developments. Activities and talks are under way with the aim of finding a new model for investing in the rehabilitation of the Sava river waterway and its ports.

- **Port of Brčko** is located in the proximity of a developed industrial area. It enables a direct goods flow on the Sava river to the Danube ports as well as to ports in the North Sea and Black Sea. It has a good connection to other modes of transport. The equipment allows for transport of grain and bulk cargo. In the last ten years, transhipment mostly involved coal, soybean meal, coke, steel sheets and cold rolled steel strips.

- **Port of Šamac** is characterised by large fluctuations in the quantities of transhipped goods. Indeed, it is owned by and is part of a private company and its transhipment depends on the company's actual production. The port is mostly used for delivering cold-rolled strips and shipping steel pipes.

- **Brod Oil Refinery** was established in 1892 by a Hungarian chemical industry company *(Danica)*. Its main advantages are its position on the Sava river, which is navigable between Sisak and its mouth into the Danube and further on to the Black Sea, as well as its proximity to the highway and *Jadranski Naftovod* (JANAF) a company managing an oil pipeline system.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CARGO FLEET

- There are currently around 15,200 cargo vessels sailing on European inland waterways, of which 9,800 are registered in Rhine countries, 3,500 in Danube countries and 1,900 in other European countries.
- The majority of the new dry cargo vessels that entered the European IWT market in 2019 are registered in the Netherlands (17 out of 20). Most of the new vessels (16 out of 20) had a loading capacity of more than 2,000 tonnes.
- Forty new tanker vessels entered the market in 2019, the majority being ADN type chemical tankers. In addition to 15 vessels registered in the Netherlands, 14 new tanker vessels were registered in Germany, eight new vessels in Luxembourg and three in Belgium. Out of these 40 new vessels, 24 had a loading capacity of more than 2,000 tonnes.

SIZE OF FLEETS
PER MACRO-REGION AND COUNTRY IN EUROPE

TABLE 1: **SIZE OF FLEETS** (NUMBER OF INLAND VESSELS) **PER MACRO-REGION AND VESSEL TYPE IN EUROPE**

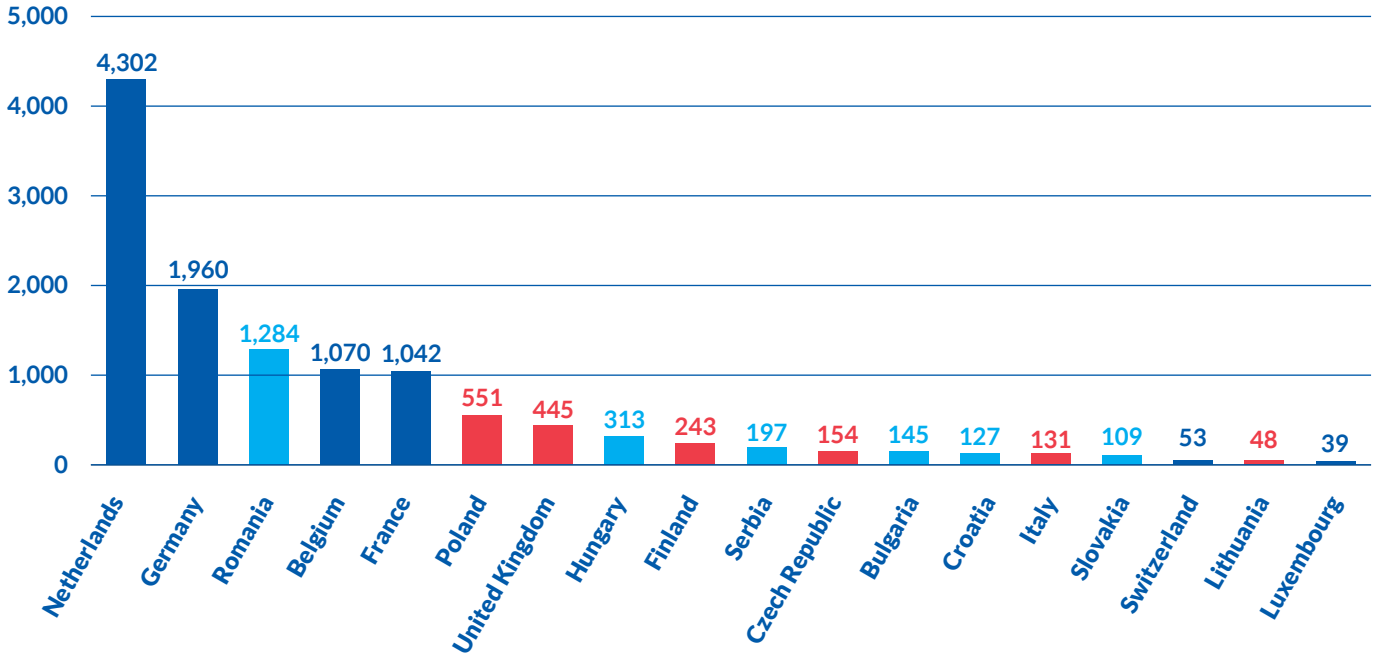
	Dry cargo vessels	Liquid cargo vessels	Push & tug boats	
RHINE FLEET	7,033	1,433	1,319	9,785
DANUBE FLEET	2,652	204	642	3,498
OTHER COUNTRIES*	1,546	26#	345	1,917
	11,231	1,663	2,306	15,200

Sources: 1) Rhine countries: VNF (France), CBS/Rijkswaterstaat (Netherlands), ITB (Belgium), Waterway and Shipping Administration of Germany, National register of Luxembourg and Swiss Rhine ports. 2) Danube countries: Danube Commission. 3) Other countries: Eurostat [iww_eq_loadcap]. [iww_eq_age], Czech Ministry of transport, Statistical Office of Poland.

** Other countries = Poland, Czech Republic, Italy, United Kingdom, Finland, Lithuania. # comprises 9 tanker vessels in Poland, 1 in the Czech Republic and 16 in Lithuania, but an unknown number in the other countries.*

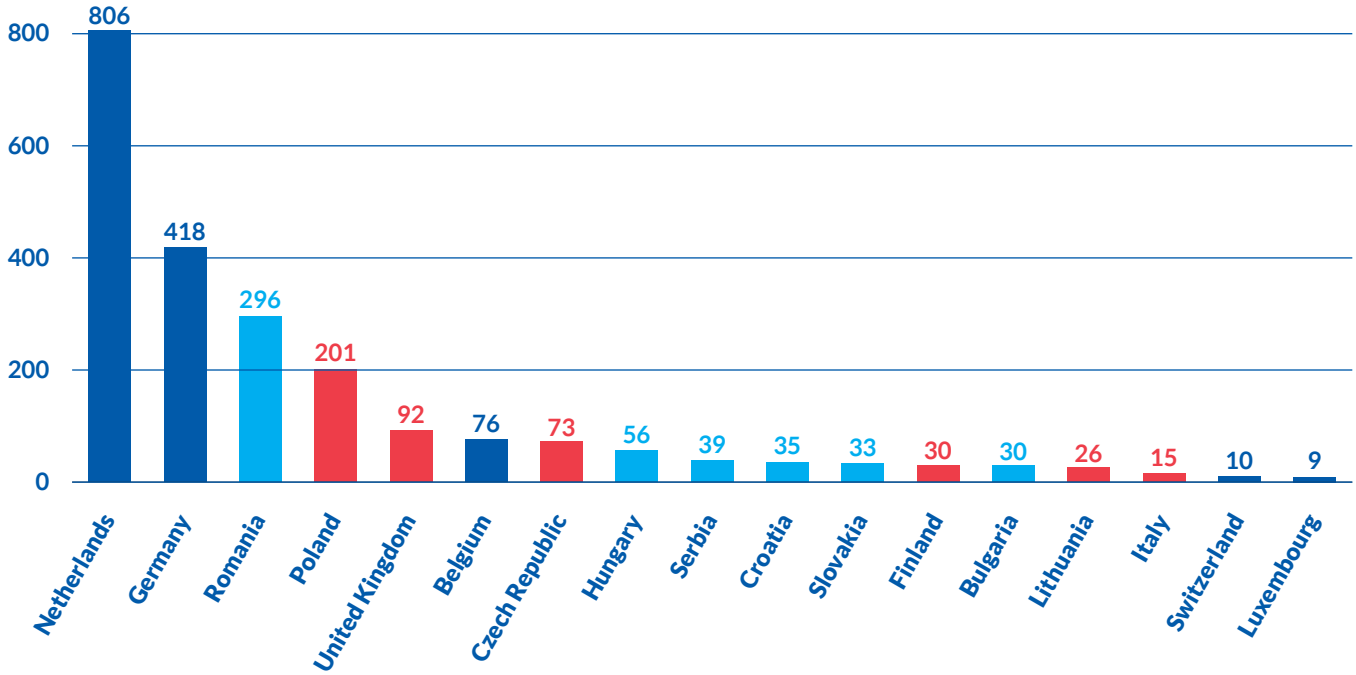
The following figures show the number of dry and liquid cargo vessels (self-propelled vessels and barges) and the number of push and tug boats per country in Europe. The data are the latest available and refer to 2019 for the Netherlands, Belgium, France, Switzerland, Luxembourg, and to 2018 for all other countries, except for Italy and Serbia (2017). Rhine countries are shaded in dark blue, Danube countries in fair blue, and other countries in red.

FIGURE 1: **NUMBER OF DRY AND LIQUID CARGO VESSELS PER COUNTRY IN EUROPE**



Sources: Eurostat [iww_eq_loadcap] and sources used for Rhine countries in the table above

FIGURE 2: **NUMBER OF PUSH BOATS AND TUGBOATS PER COUNTRY IN EUROPE**



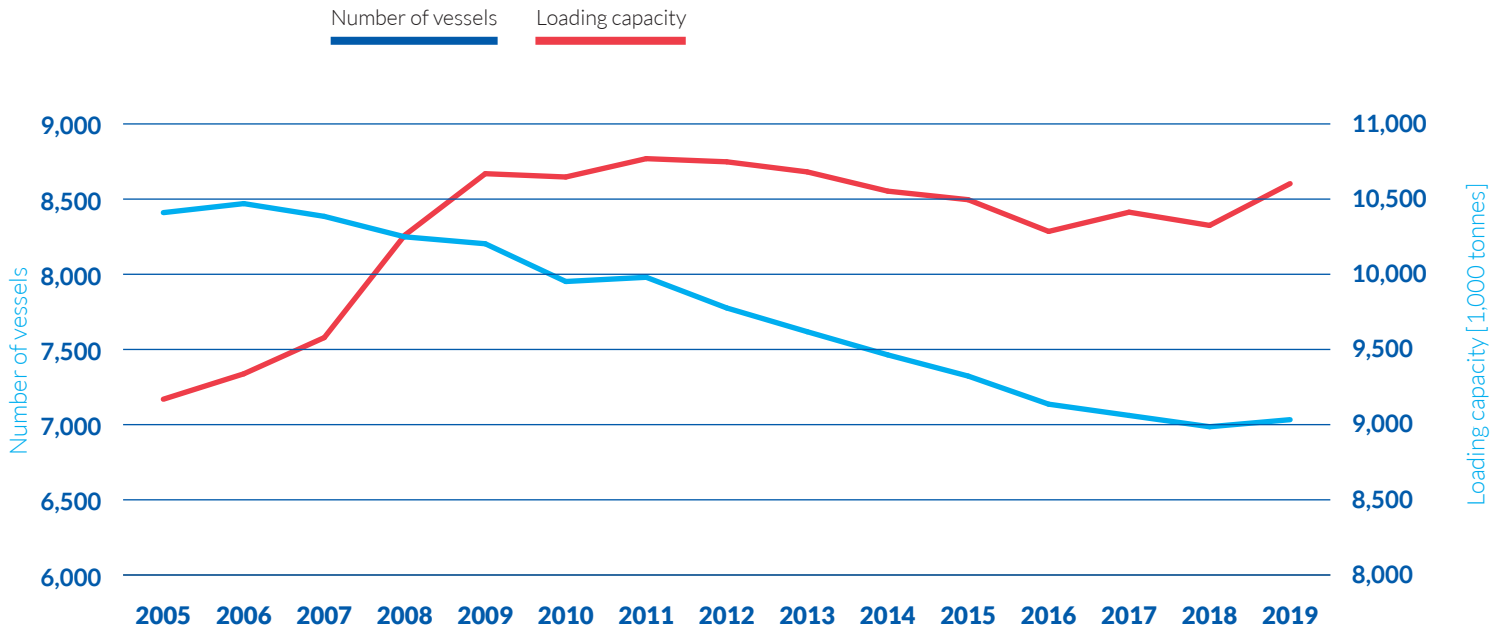
Sources: Eurostat [iww_eq_age] and sources used for Rhine countries in the table above

EVOLUTION OF THE RHINE FLEET

DRY CARGO FLEET IN RHINE COUNTRIES

In 2019, the number of self-propelled vessels and barges amounted to 7,033 units, which was - for the first time since 2011 - a higher number than in the previous year (+1%). The loading capacity was also above the 2018 level, with 10.6 million tonnes (+2.6%). This fleet size increase reflects the uptake in the newbuilding rate in recent years (see part on newbuildings). As in 2018 the share of the Dutch fleet represented 50% in terms of the number of vessels, and 58% in terms of loading capacity.

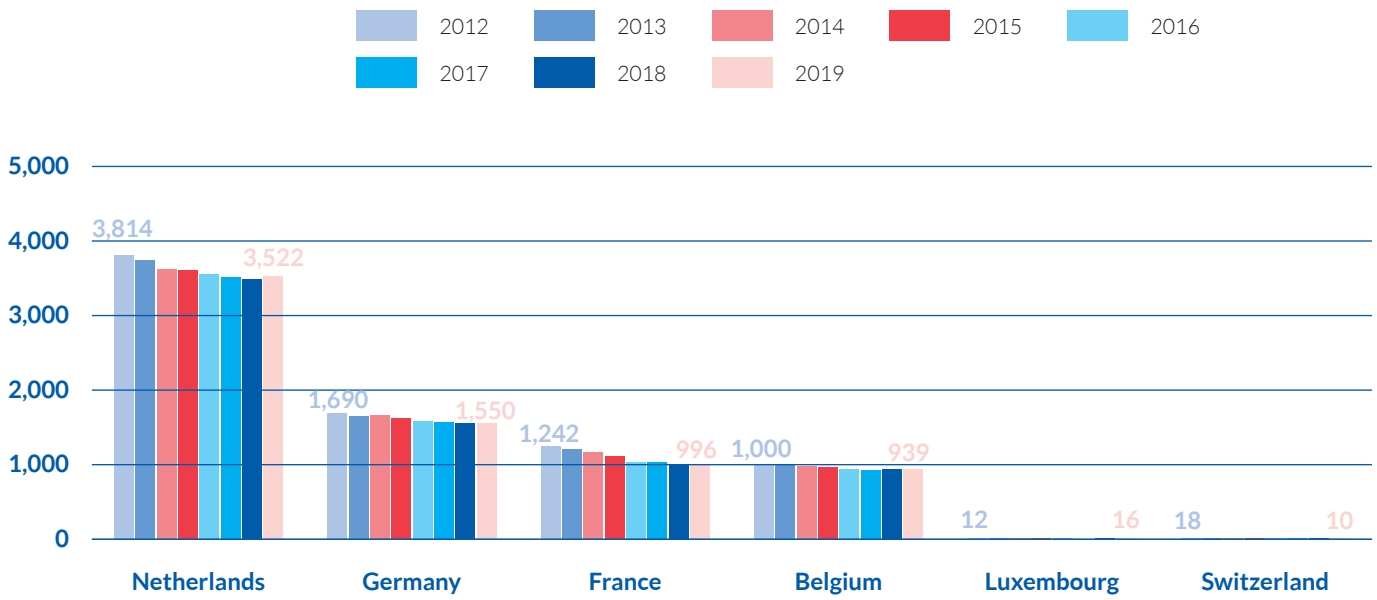
FIGURE 3: **EVOLUTION OF THE FLEET OF DRY CARGO VESSELS IN RHINE COUNTRIES ***



Source: CCNR based on data from CBS (based on Rijkswaterstaat), Waterway administration of Germany, VNF, ITB, Swiss Rhine ports, National register of Luxembourg
**= self-propelled vessels and barges, without push boats and tugs*

The number of dry cargo vessels in Rhine countries was 7,033 in 2019, compared to 7,776 in 2012. The reduction in this period of time was strongest in relative terms in France, where the number of vessels dropped by 246 units, or 20%. In the other three countries, the percentage reduction was 6 to 8%.

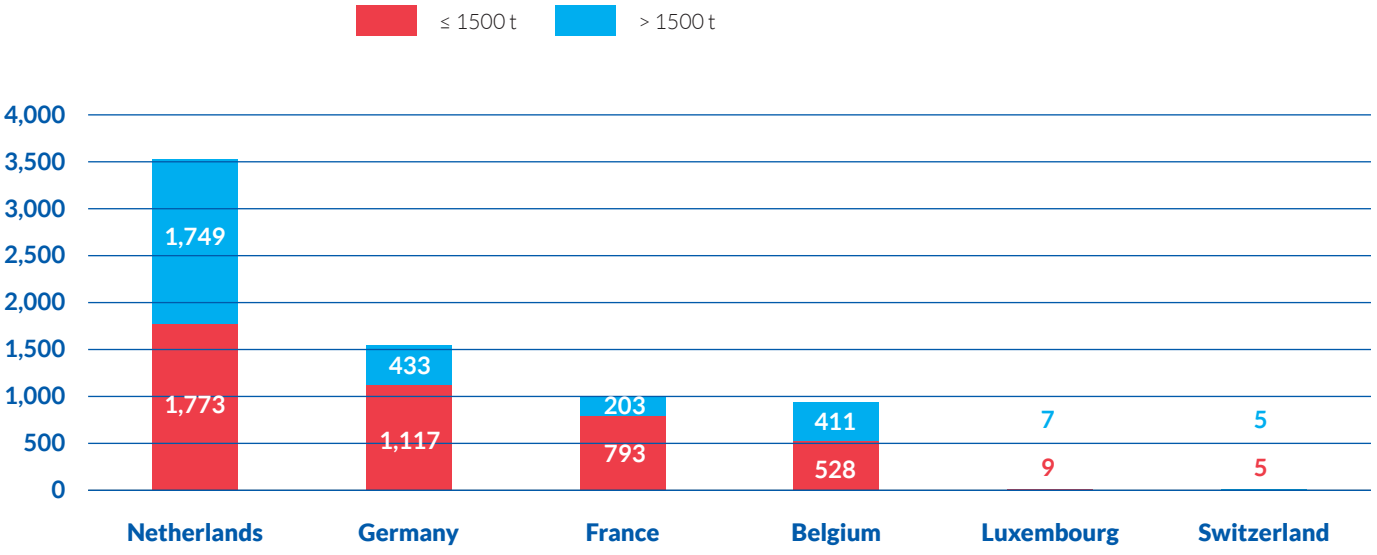
FIGURE 4: **NUMBER OF DRY CARGO VESSELS PER RHINE COUNTRY ***



Source: CCNR based on national fleet data
** German fleet data for 2019 are based on 2018 data.*

Small vessels are often defined as vessels with a loading capacity of up to 1,500 tonnes. According to this definition, in 2019 there were approximately 4,225 small dry cargo vessels in Rhine countries, which is a share of 60% of all dry cargo vessels.

FIGURE 5: **NUMBER OF DRY CARGO VESSELS PER RHINE COUNTRY PER SIZE CLASS IN 2019 ***



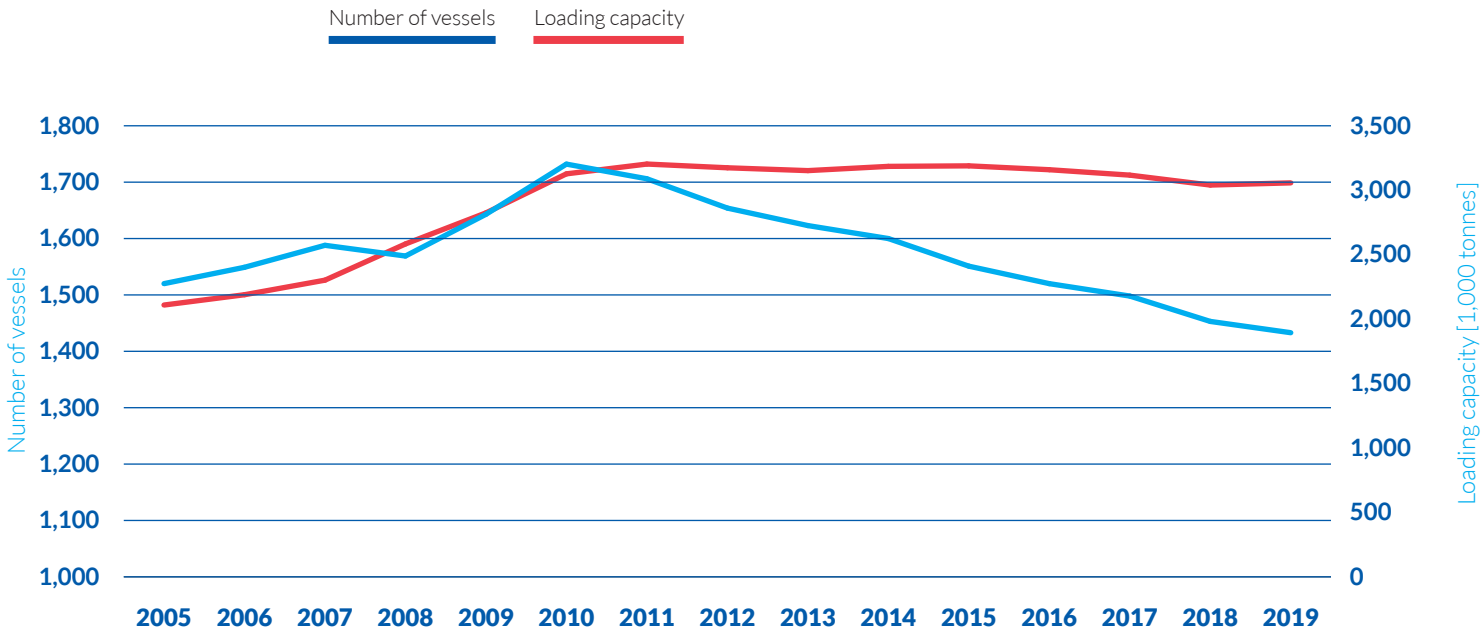
Sources: national fleet data, CCNR analysis
** German fleet data are for 2018.*

There is also an alternative definition for a small vessel taking into account that small vessels are only those with a loading capacity of 650 tonnes or less. According to this definition, there are 703 small Dutch dry cargo vessels (20% of the Dutch dry cargo fleet in terms of numbers), and 253 small Belgian dry cargo vessels (27% of the Belgian dry cargo fleet). The number of German and French vessels with a capacity below 650 tonnes cannot be indicated, as the size categories are different in the French and German fleet statistics. An estimation based on existing size categories points to a share of more than 30% and less than 40%.

LIQUID CARGO FLEET IN RHINE COUNTRIES

The economic boom prior to 2009 and the need to transform the fleet from single to double hull increased the size of the fleet by around 1 million tonnes of cargo carrying capacity in only five years, between 2005 and 2010, or by almost 50%. After 2010 the newbuilding rate subsided, single hull vessels gradually left the market, and so the number of vessels was reduced. The total fleet capacity, however, remained more or less constant, as the vessels leaving the fleet were small and the new vessels coming on the market were mostly large.

FIGURE 6: **EVOLUTION OF THE FLEET OF LIQUID CARGO VESSELS IN RHINE COUNTRIES**



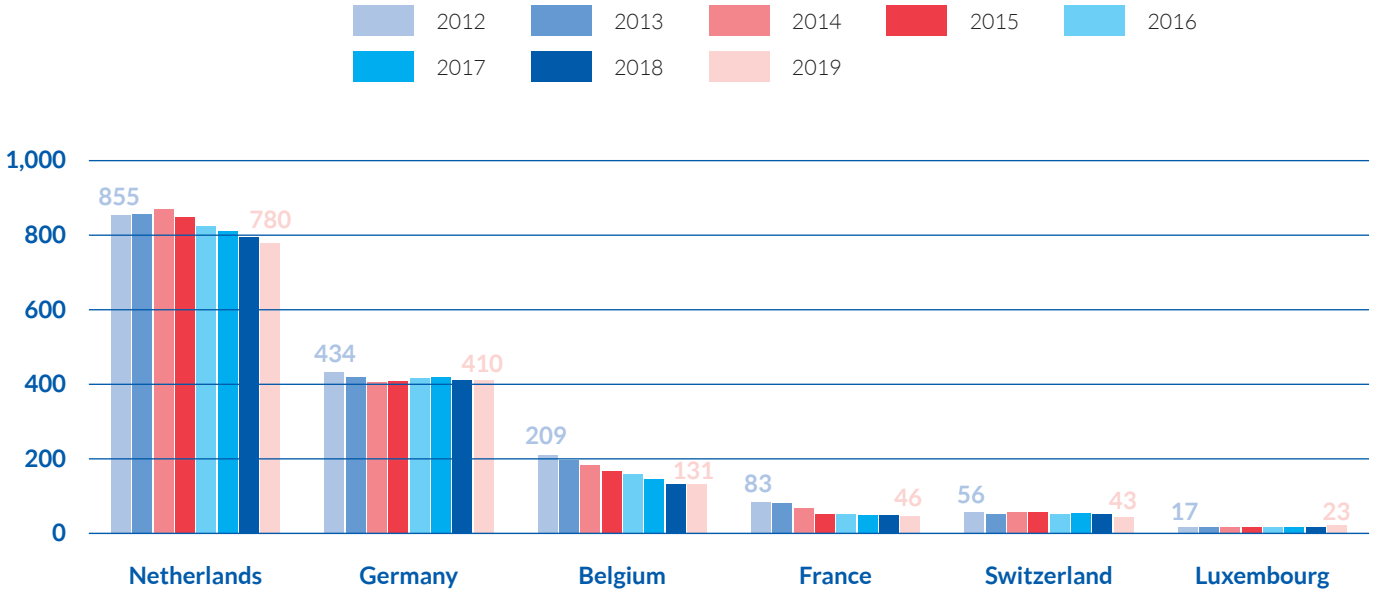
Source: CCNR based on national fleet data

By January 2020, the total number of 1,433 liquid cargo vessels in Rhine countries comprised 1,111 ADN type tankers, according to the European Barge Inspection scheme EBIS.[21] Of these 1,098 were double hull tankers and 13 were single hull tankers. The EBIS database also indicates that there are nine LNG dual fuel tanker vessels sailing in the Rhine region.

The difference between all liquid cargo vessels in Rhine countries (1,433) and the number of ADN type tankers (1,111) gives a residual figure of 322 vessels. This number contains the following ship types:

- ADN tankers (dangerous goods transport) in dedicated trade for non EBIS members,
- older bunker vessels,
- vegetable oil tankers,
- freshwater vessels for the delivery of potable water to maritime vessels in seaports,
- cement (concrete) tankers,
- bilge boats / waste goods tankers.

FIGURE 7: **NUMBER OF ALL LIQUID CARGO VESSELS PER RHINE COUNTRY**



Source: CCNR based on national fleet data

[21] *The European Barge Inspection Scheme (EBIS) has been developed by oil and chemical companies as part of their commitment to improving the safety of tanker barging operations.*

EVOLUTION OF THE DANUBE FLEET
AND THE CARGO FLEET IN OTHER COUNTRIES

DRY CARGO VESSELS IN THE DANUBE REGION

According to the statistics of the Danube Commission (with clarification based on surveys of shipping companies in the DC Member States) there were, by the end of 2017, around 400 push boats, 242 tugs, 409 self-propelled dry cargo vessels, and circa 2,100 dry cargo barges in the Danube fleet. More than 70% of the total transport volume is carried by pushed convoys, which are composed as set out in the table below, depending on the waterway class and shipping conditions.

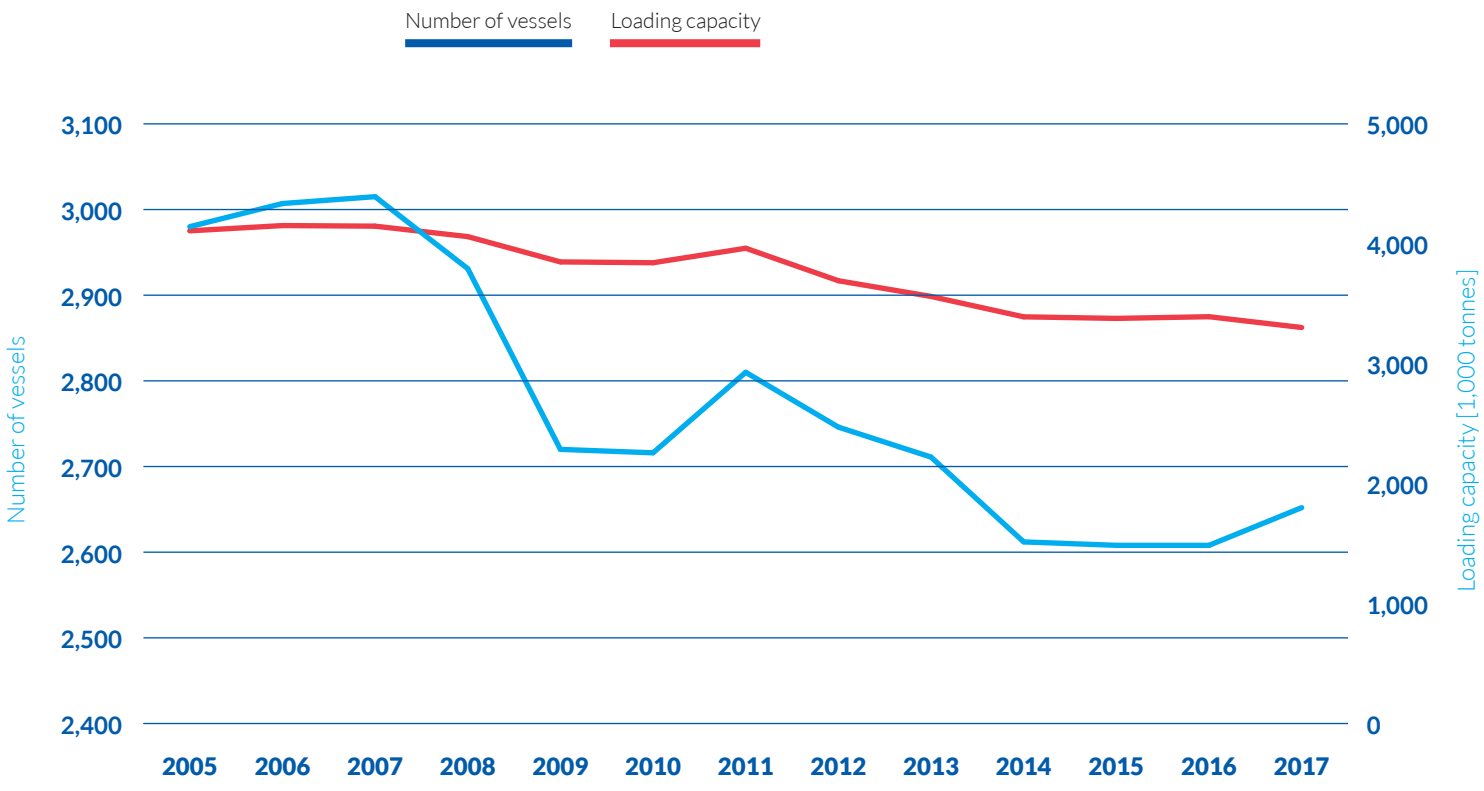
TABLE 2: **TYPE OF DRY CARGO TRANSPORT ON THE DANUBE** (SHARE OF TOTAL TRANSPORT IN %)

Push boat + 7-9 pushed barges (lighter)	**40-42%**
Push boat + 6 lighters	**20-23%**
Push boat + 4 lighters	**12-14%**

Source. Danube Commission market observation

The total Danube fleet of dry cargo vessels has become smaller since 2005. But from the year 2014 onwards, the falling trend came to halt, and the fleet size has now stabilised. The Romanian dry cargo fleet is the largest in the Danube area with a share of around 48% of all dry cargo vessels. Its size is increasing.

FIGURE 8: **EVOLUTION OF THE DRY CARGO FLEET IN DANUBE COUNTRIES**



Source: Danube Commission

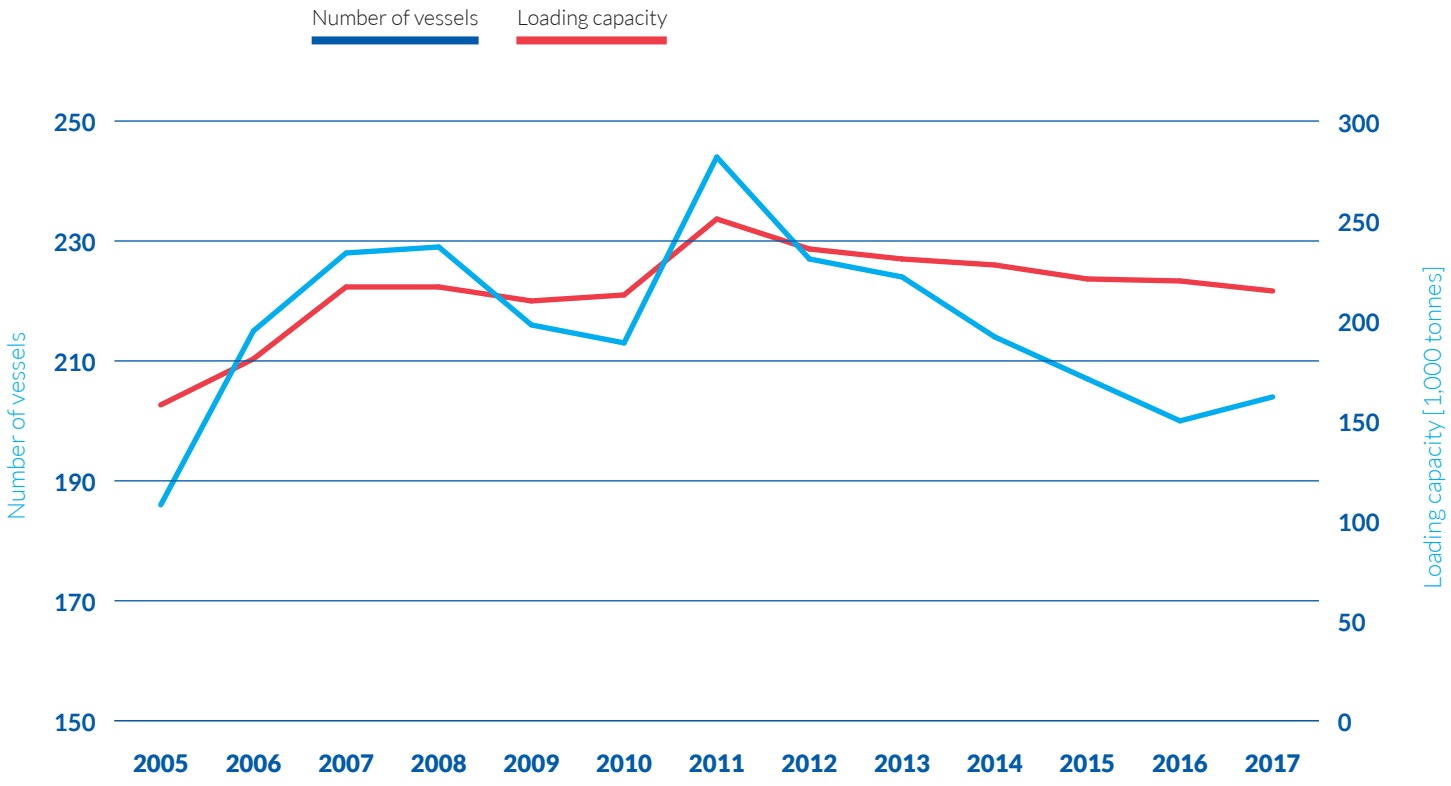
LIQUID CARGO FLEET IN THE DANUBE REGION

According to the statistics of the Danube Commission (with clarification based on surveys of shipping companies in the DC Member States) there were, by the end of 2017, 74 self-propelled tanker vessels and 128 tanker barges, with a total cargo capacity of around 0.22 million tonnes.

The total number of liquid cargo vessels in Danube countries grew until 2011 but changed to a decreasing trend in the years after 2011. The loading capacity was less affected by this negative trend which is a certain parallel to the evolution of the liquid cargo fleet in Rhine countries. Romania has the largest tanker fleet in the Danube area with around 47% of all 204 tanker vessels in Danube countries.

By January 2020, the database of the European Barge Inspection Scheme EBIS, which includes only ADN type tankers, contained only 34 vessels registered in Danube countries (12 in Austria, 9 in Slovakia, 9 in Romania, 4 in Serbia), of which 32 were double hull tankers and 2 were single hull tankers. Therefore, there is a large number of ADN tankers operating on the lower Danube which are not EBIS-inspected. Despite ADN legislation, a number of single hull barges are still in operation for ADN goods.

FIGURE 9: **EVOLUTION OF THE LIQUID CARGO FLEET IN DANUBE COUNTRIES**

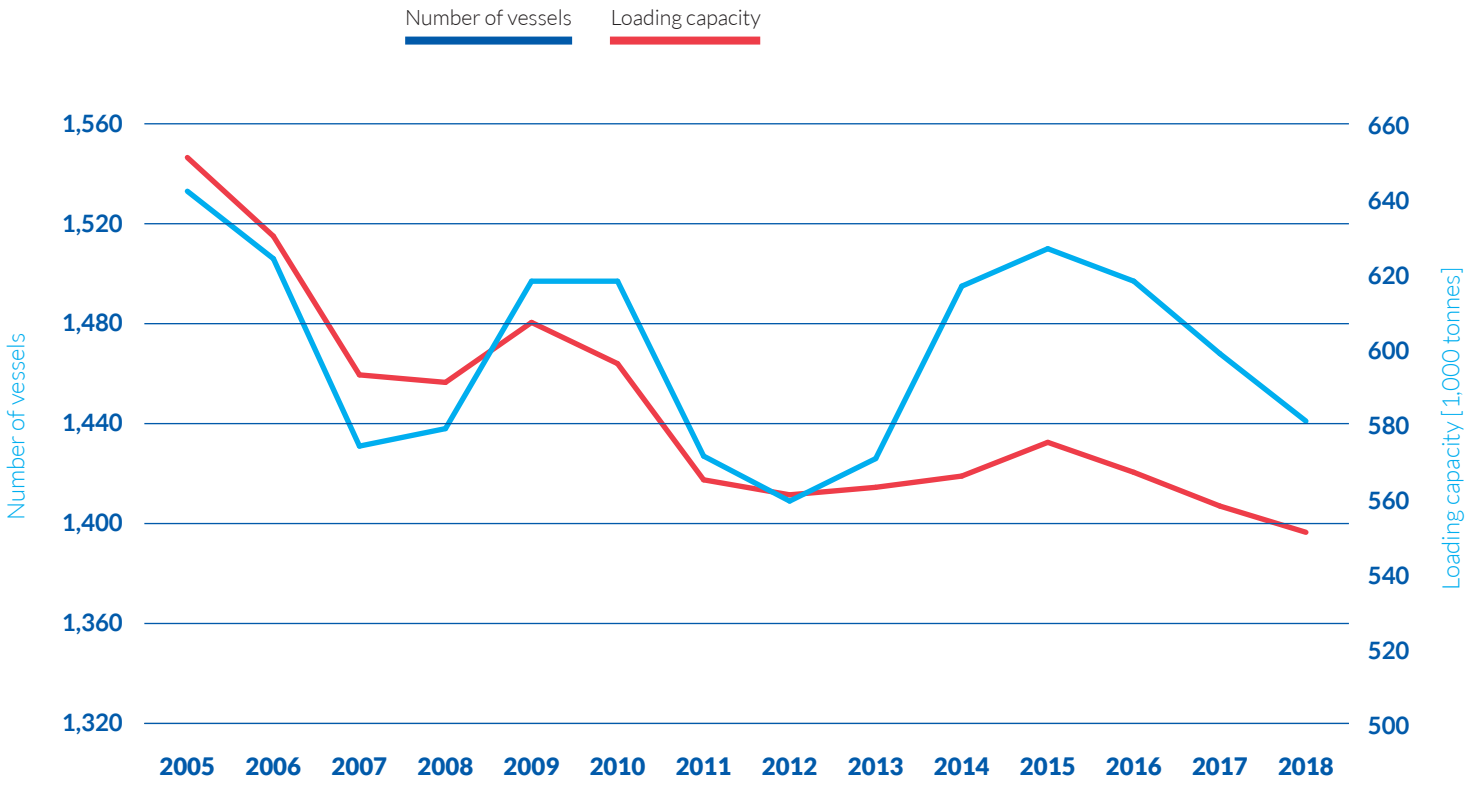


Source: Danube Commission

CARGO FLEET IN OTHER EUROPEAN COUNTRIES

The following figure shows the evolution of the number of dry and liquid cargo vessels in Poland, the Czech Republic, Finland, the United Kingdom and Lithuania. Data for Italy are partly missing and are also influenced by a structural break which makes it impossible to integrate them into the series.

FIGURE 10: **NUMBER OF SELF-PROPELLED VESSELS AND BARGES IN POLAND, THE UNITED KINGDOM, FINLAND, THE CZECH REPUBLIC AND LITHUANIA**



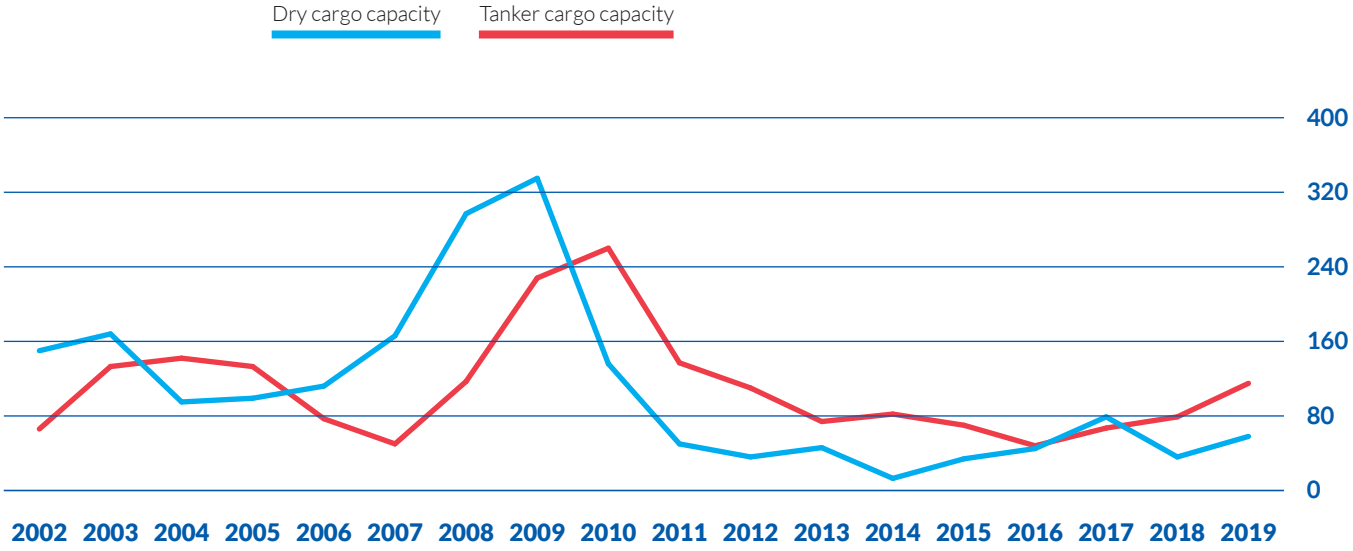
Source: Eurostat [iww_eq_age]

NEW VESSEL CONSTRUCTION

In 2019, **20** new dry cargo vessels and **40** new tanker vessels were added to the fleets in western Europe. The recovery in newbuilding activity continued.

In 2019, the newbuilding activity continued its slightly rising trend that had started in 2015 for dry cargo vessels and in 2017 for liquid cargo vessels. This rising trend represents a recovery from the low point that was reached in 2014 (dry cargo) and in 2016 (liquid cargo), as the following figure shows.

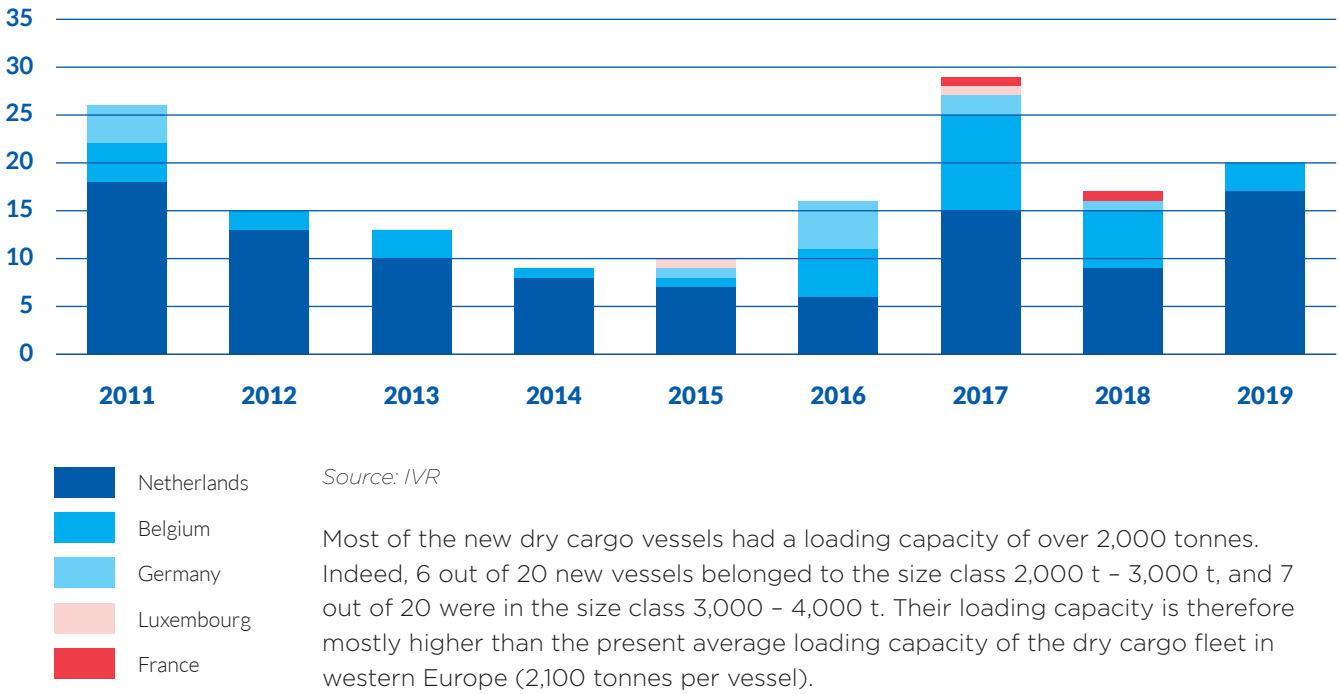
FIGURE 11: **NEW CAPACITY COMING ON THE MARKET FOR DRY AND LIQUID CARGO** (LOADING CAPACITY IN 1,000 T)



Source: IVR

The majority of the new dry cargo vessels that came on the market in 2019 are registered in the Netherlands (17 out of 20).

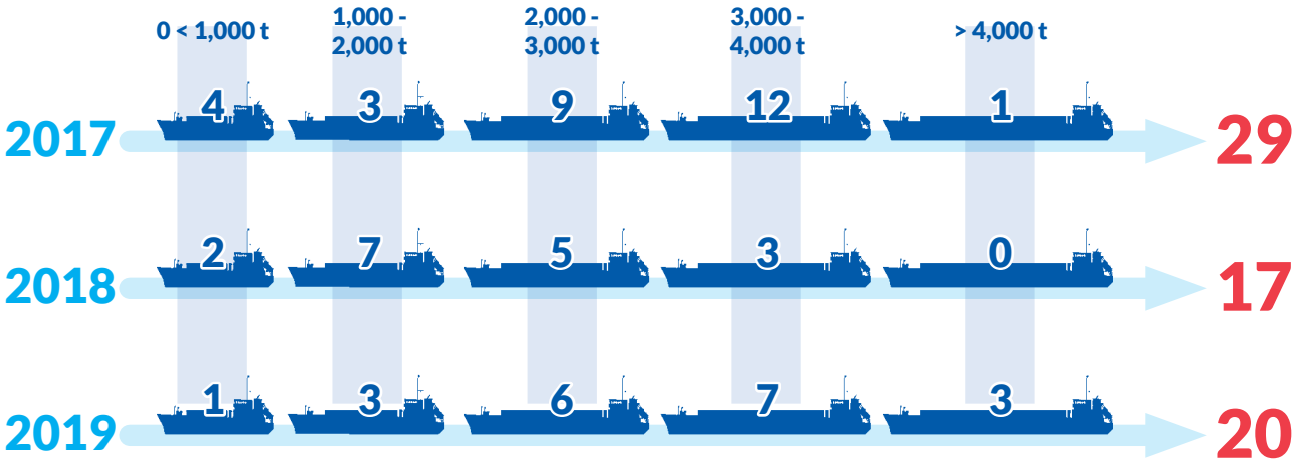
FIGURE 12: **NEW DRY CARGO VESSELS COMING ON THE MARKET PER COUNTRY OF REGISTER** (NUMBERS, 2011-2019)



Source: IVR

Most of the new dry cargo vessels had a loading capacity of over 2,000 tonnes. Indeed, 6 out of 20 new vessels belonged to the size class 2,000 t – 3,000 t, and 7 out of 20 were in the size class 3,000 – 4,000 t. Their loading capacity is therefore mostly higher than the present average loading capacity of the dry cargo fleet in western Europe (2,100 tonnes per vessel).

TABLE 3: **NEWLY BUILT DRY CARGO VESSELS ACCORDING TO LOADING CAPACITY**

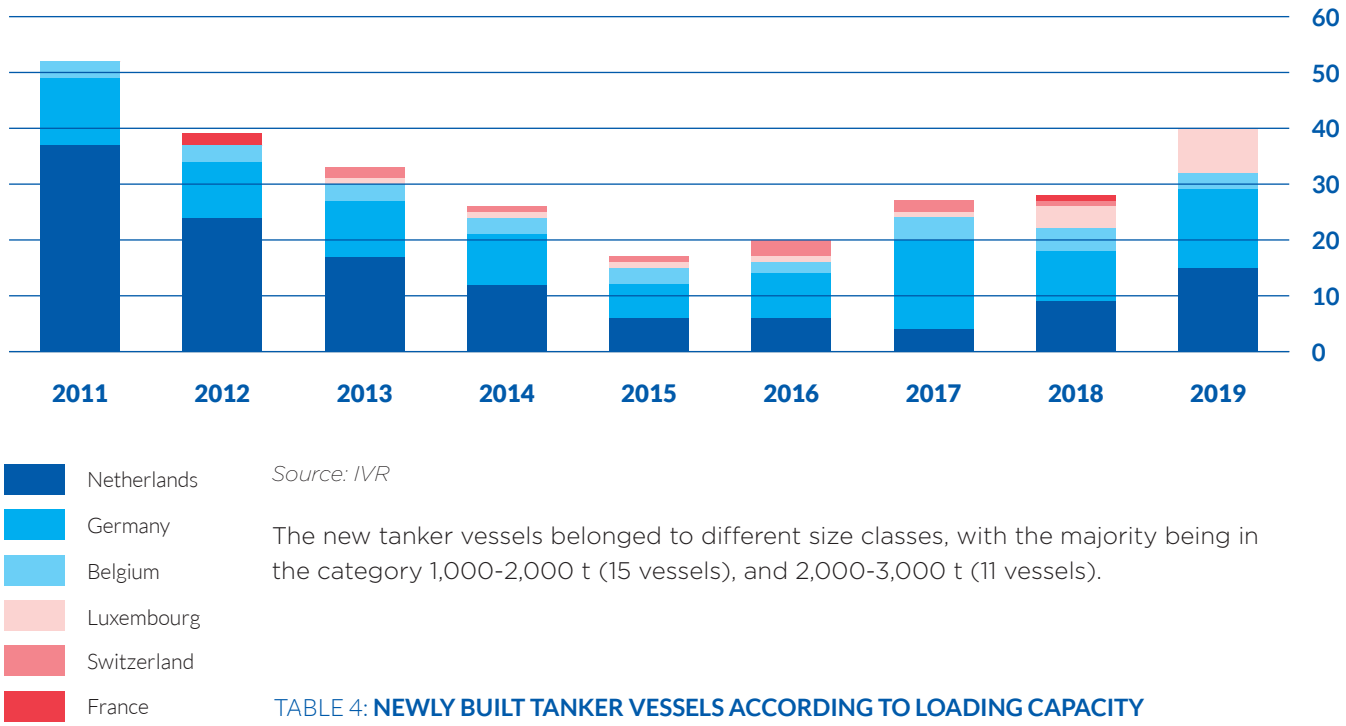


Source: IVR

With regard to the measurements of vessels, 5 out of 20 new dry cargo vessels measured 110 metres long and 11.5 metres wide. But smaller sized vessels were also quite frequently observed.

According to the IVR database, 40 new tanker vessels entered the market in 2019, and 42 according to the EBIS system. The majority were ADN type chemical tankers (38 according to EBIS), and there were a small number of 4 ADN type Gas tankers. Next to 15 vessels registered in the Netherlands there were 14 new vessels registered in Germany, 8 new vessels in Luxembourg and 3 in Belgium.

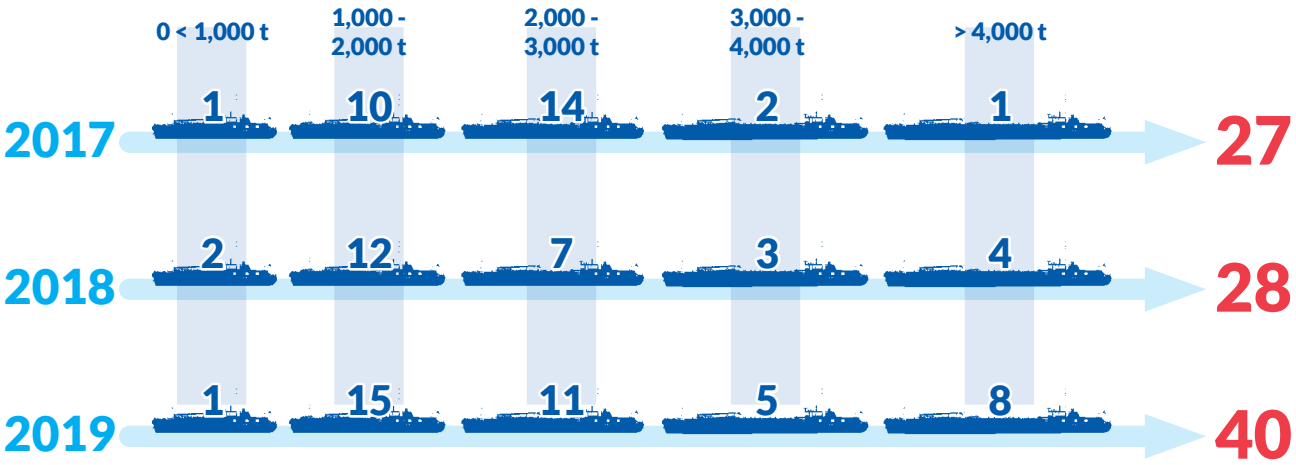
FIGURE 13: **NEW TANKER VESSELS COMING ON THE MARKET PER COUNTRY OF REGISTER** (NUMBERS, 2011-2019)



Source: IVR

The new tanker vessels belonged to different size classes, with the majority being in the category 1,000-2,000 t (15 vessels), and 2,000-3,000 t (11 vessels).

TABLE 4: **NEWLY BUILT TANKER VESSELS ACCORDING TO LOADING CAPACITY**



Sources: IVR, analysis CCNR

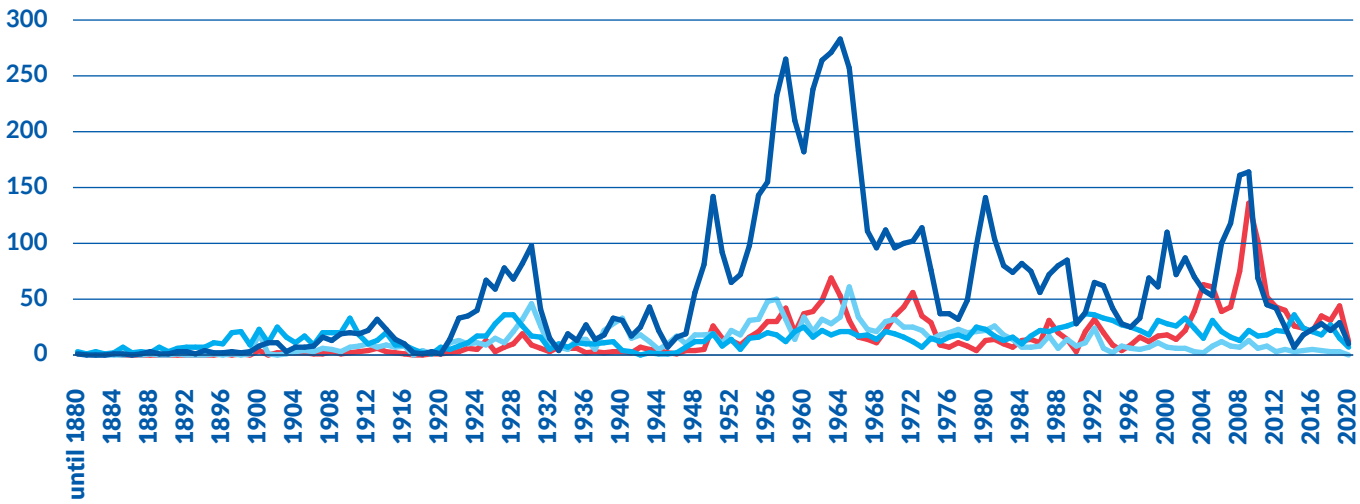
The most frequent length of the new vessels is 110 metres. 18 out of 40 new tankers in 2019 were of this classical length. The second most frequent length is 86 metres (13 vessels). Very large vessels were also observed: 6 new vessels are 135 metres long.

Between 2012 and 2019, 26 new tugs, push boats and push-tugs came on the European market. In 2019, there were three new boats, just as in 2018 and in 2017. One of them is the push boat MS AMBITIOUS, built for the French company *Compagnie Fluviale de Transport* (CFT) which is 29.5 metres long and 11.2 metres wide. The other two push boats are registered in Luxembourg (MS OTTO) and in Switzerland (MS VIKING ORVAR).

AGE STRUCTURE OF FLEETS

Based on the IVR fleet database, the distribution of the number of vessels per year of construction was established for Rhine countries and it can be seen that the Rhine fleet[22] is relatively old. About 80% of the fleet with a known year of construction were constructed in the 20th century. This applies to only about 58% of the tank cargo vessels but to about 84% of the dry cargo fleet, which enjoyed a large bulk in commissioning activity in the late 1950s and early 1960s and a smaller one in the 1980s, particularly at the start of this decade. There is even another smaller increase in the number of vessels constructed in the 1920s. Furthermore, there are many vessels in the dry cargo and liquid cargo segment that were constructed during the economic boom in the years up until the economic crisis of 2009, while this effect does not show for passenger and push/tug vessels.

FIGURE 14: **COMMISSIONING ACTIVITY FOR THE RHINE FLEET OVER TIME**



Sources: IVR, CCNR analysis. Furthermore, 212 dry cargo vessels, 69 passenger vessels, 61 push/tug vessels and 14 tank cargo vessels have an unknown year of construction.

Thanks to its large river cruise fleet (about 72% of the country's vessels), and a small but very new tanker fleet, Switzerland has a comparatively modern fleet. Only about 23% of its vessels were constructed in the 20th century, which thus makes it the youngest Rhine fleet. On the contrary, about 94% of all vessels of the French fleet, the oldest among the Rhine countries, were constructed in the 20th century. About 78% of the vessels of the Dutch fleet, which is the largest, were constructed before 2000.[23]

According to information from the market observation of the Danube Commission, the age structure of the Danube fleet (approximate figures for end of 2017) is characterised by the following ratios: around 72% of the push boats & tugs and 16% of the pushed barges are older than 40 years; 59% of the pushed barges are older than 35 years.

[22] *All vessels from the Netherlands, Belgium, Luxembourg, Germany, France and Switzerland*
[23] *Overall, it should be mentioned that the total IVR database contains not only active vessels but partly also inactive vessels. Therefore, the term "commissioning activity" was chosen instead of age structure.*

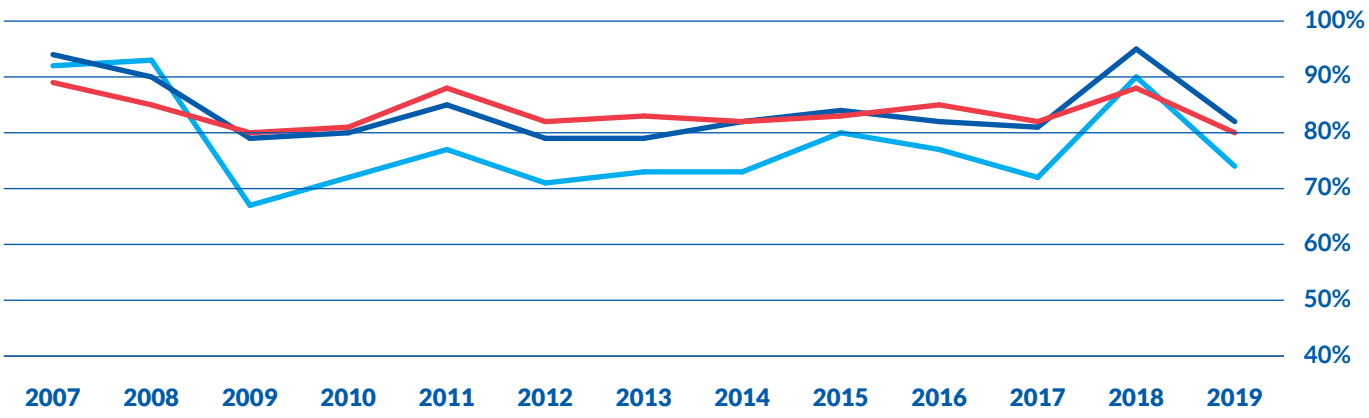
CAPACITY MONITORING

The average utilisation rate of the fleet is calculated with a model which takes into account transport demand per goods segment in Rhine countries (the Netherlands, Germany, France, Belgium, Switzerland), the tonnage of the fleet in Rhine countries and water levels on the Rhine at the gauge stations of Maxau, Kaub, Cologne and Duisburg. The rate of capacity utilisation is defined as the ratio of the needed fleet tonnage (derived fleet demand, based on transport demand) and the available fleet tonnage according to Rhine fleet statistics presented in part 2 of this chapter.

Dry cargo vessels

In 2019, the average utilisation rate of the dry cargo fleet decreased significantly compared to 2018. In the corresponding graph, the evolution of the capacity utilisation rate, reflecting the demand/supply ratio is plotted for the different fleet segments. In 2018, the capacity utilisation of the fleet had been very high. The reason is that the low water period in 2018 had reduced the effective available fleet capacity (supply side reduction), as each vessel could only be loaded to a lesser degree. Also, more vessels had to be put into service, which further contributed to the increase of the overall utilisation rate of the fleet in 2018.

FIGURE 15: **CAPACITY UTILISATION FOR THE DRY CARGO FLEET IN RHINE COUNTRIES** (PER FLEET SEGMENT)



Source: Panteia analysis based on data provided by CCNR

In 2019, these conditions were no longer given. The effective available vessel and fleet capacity were higher (increase of supply side). In combination with a lower transport demand in 2019 (reduction of coal transport due to energy transition, reduction of iron ore transport due to trade tensions in the steel industry), the utilisation rate of the fleet decreased.

The average fleet utilisation rates dropped the sharpest for vessels with a load capacity of more than 2,000 tonnes. The major reason for this was the vulnerability of these vessels to extreme water conditions.

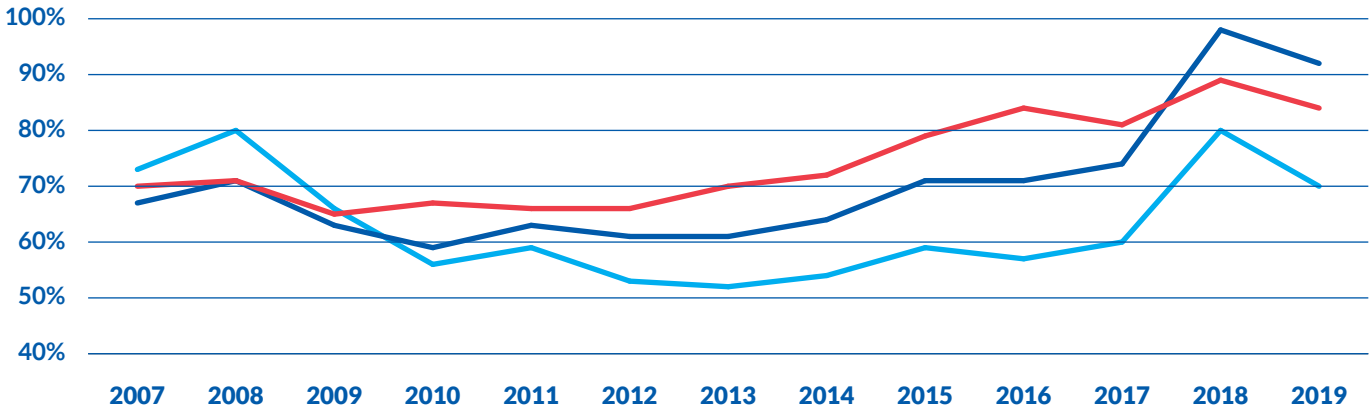
For small and medium size vessels (vessel category < 1,000 tonnes and category 1,000 to 2,000 tonnes), the capacity utilisation dropped less sharply. These vessels are generally optimised for navigating the Dutch or German canal networks with significant draft limitations. The light weight and empty draft of these vessels is relatively low, which allows them to pass the shallow sections on the Middle Rhine even under difficult low water conditions. Also, vessels in these categories were affected to a lesser extent by energy transition, as they are mainly involved in the transport of agricultural products and building materials.

Although the dry cargo fleet capacity in 2019 was smaller than in 2009, when the financial crisis broke out, there was still overcapacity in the dry cargo fleet. This is mainly the result of a lower demand for dry cargo vessels; the demand for dry cargo ships in 2019 was even lower than during the financial crisis in 2009 and 2010.

Liquid cargo vessels

In 2019 the average utilisation rate of the liquid cargo fleet dropped by nine percentage points from 85% to 76%. The major reason for this decrease was the absence of low water levels in 2019. Throughout the year, the entire Rhine had rather good navigation conditions. Therefore, the cargo carrying capacity of liquid bulk tankers could be utilised to or near the maximum extent. This was contrary to 2018, when large parts of the year were affected by low waters, resulting in high capacity utilisation rates for the liquid cargo fleet.

FIGURE 16: **CAPACITY UTILISATION FOR THE LIQUID CARGO FLEET IN RHINE COUNTRIES** (PER FLEET SEGMENT)



Source: Panteia analysis based on data provided by CCNR

The capacity utilisation rate was nevertheless quite high in 2019, due to more transport demand for mineral oil products (a temporary closure of a refinery in Switzerland thereby played a role) as well as to a relatively low supply side. The decommissioning of single hull tankers, which reduced the fleet capacity significantly in recent years, resulted in a relatively low supply side level in 2019. As a result of all the above-mentioned factors, the capacity utilisation rates of all fleet categories decreased but was still at a relatively high level.

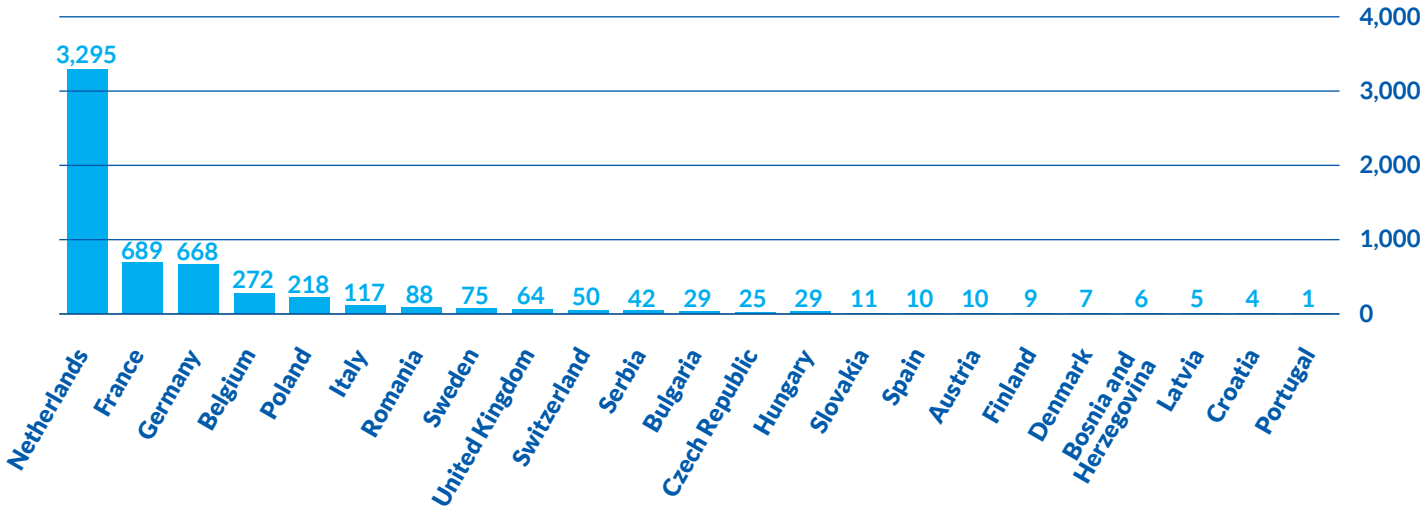
06

COMPANIES, EMPLOYMENT, PERSONNEL COSTS AND GROSS OPERATING RATE

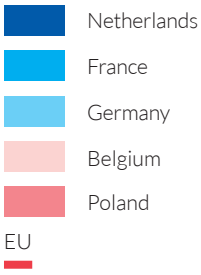
- In 2017, 5,600 IWW goods transport companies employing 23,291 persons were active in Europe, which was slightly less than in the previous year. 88.5% of those companies were registered in Rhine countries, representing 73% of all persons employed in Europe.
- In the same year, 4,000 IWW passenger transport companies in Europe employed 21,581 persons, which is around 800 more than in the previous year. 43% of those companies were registered In Rhine countries, representing 63% of all persons employed in Europe.
- The highest net turnover in IWW goods transport is in the Netherlands, and for IWW passenger transport it is in Switzerland. In both sectors, turnover is generally much lower in Danube countries due to a lower share in transport performance and a lower wage and price level.

COMPANIES AND EMPLOYMENT IN GOODS TRANSPORT

FIGURE 1: **NUMBER OF COMPANIES IN IWW GOODS TRANSPORT IN EUROPE***

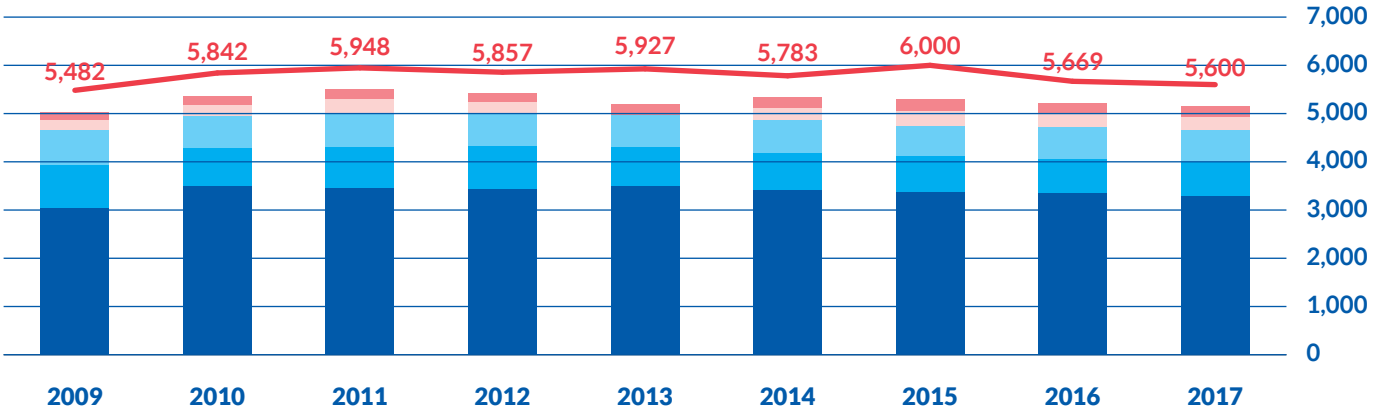


Source: Eurostat [sbs_na_1a_se_r2] and Eidgenössische Steuerverwaltung (CH)
** Data for 2017*



According to Eurostat, in 2017[24] 5,600 IWW freight transport companies were active in Europe (EU plus Serbia and Switzerland), compared to 5,669 the previous year. Of these, 88.5% were registered in Rhine countries (the Netherlands, Germany, Belgium, France, Switzerland). The countries with the highest number of companies are four Rhine countries and Poland, which together account for 92% of all companies in Europe.

FIGURE 2: **NUMBER OF COMPANIES IN IWW GOODS TRANSPORT IN EUROPE**

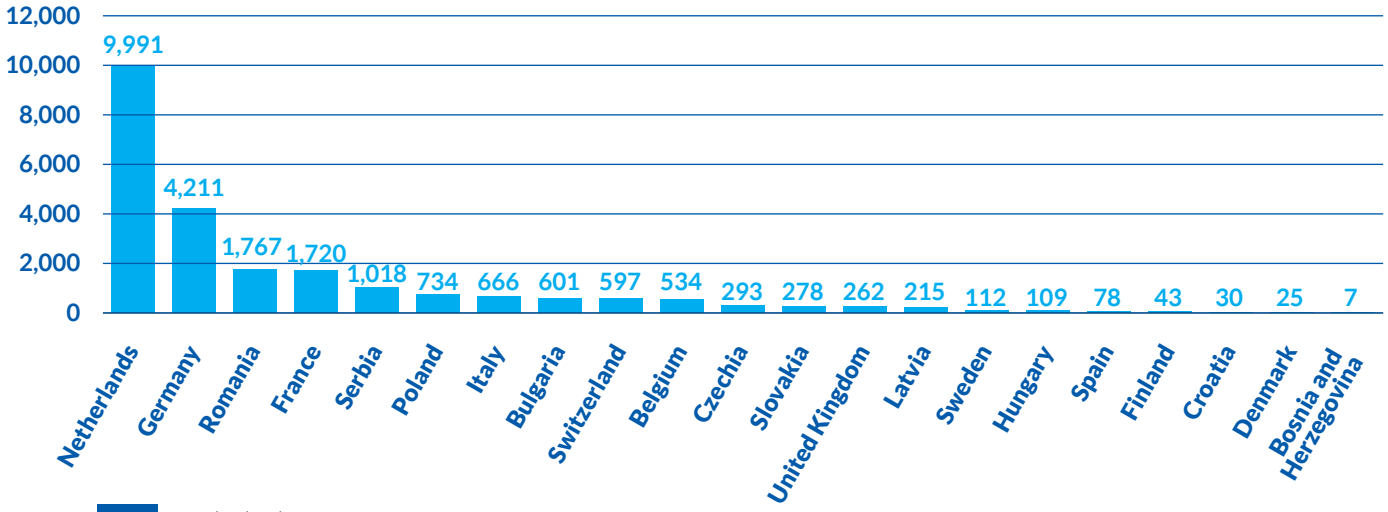


Source: Eurostat [sbs_na_1a_se_r2] and Eidgenössische Steuerverwaltung (CH). No data for Belgium for 2013.

[24] *The year 2017 was the most recent year for Eurostat statistics on companies.*

The number of employed persons includes the self-employed, helping family members and employees. The total number of this variable stood at 23,291 in 2017 compared to 23,666 in 2016.[25] Of these employed persons 73% were working for companies in Rhine countries, 17% for companies in Danube countries and 10% for companies in countries outside the Rhine and Danube regions.

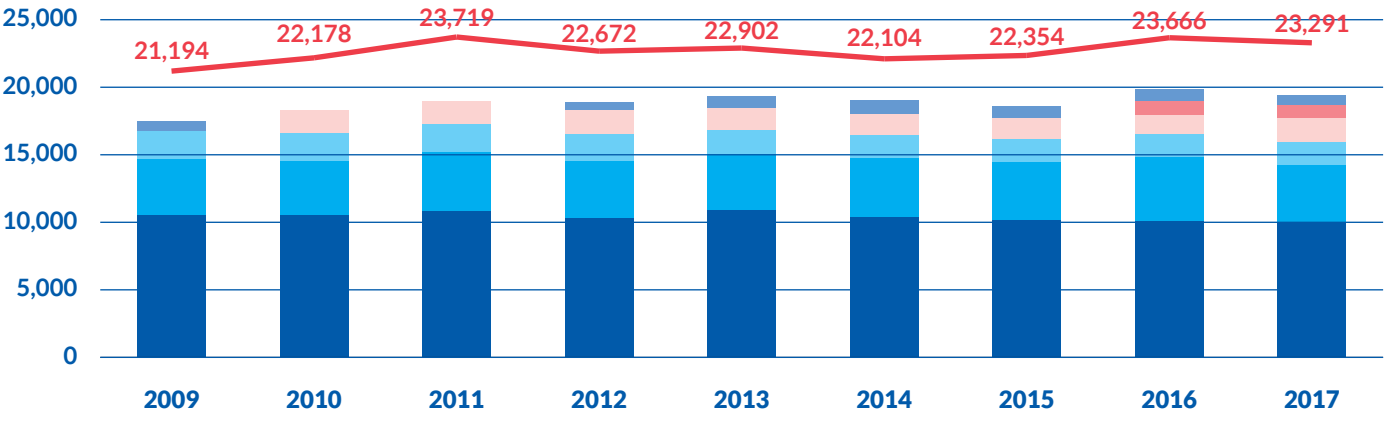
FIGURE 3: **NUMBER OF PERSONS EMPLOYED IN IWW GOODS TRANSPORT IN EUROPE***



Sources: Eurostat [sbs_na_1a_se_r2] and Eidgenössische Steuerverwaltung (CH)
**Data for 2017*

The countries with the largest employment in IWW goods transport are the Netherlands, Germany, Romania, France, Serbia and Poland. Employment in these countries accounted for 83% of all employment in IWW freight transport in 2017.

FIGURE 4: **NUMBER OF PERSONS EMPLOYED IN IWW GOODS TRANSPORT IN EUROPE ***

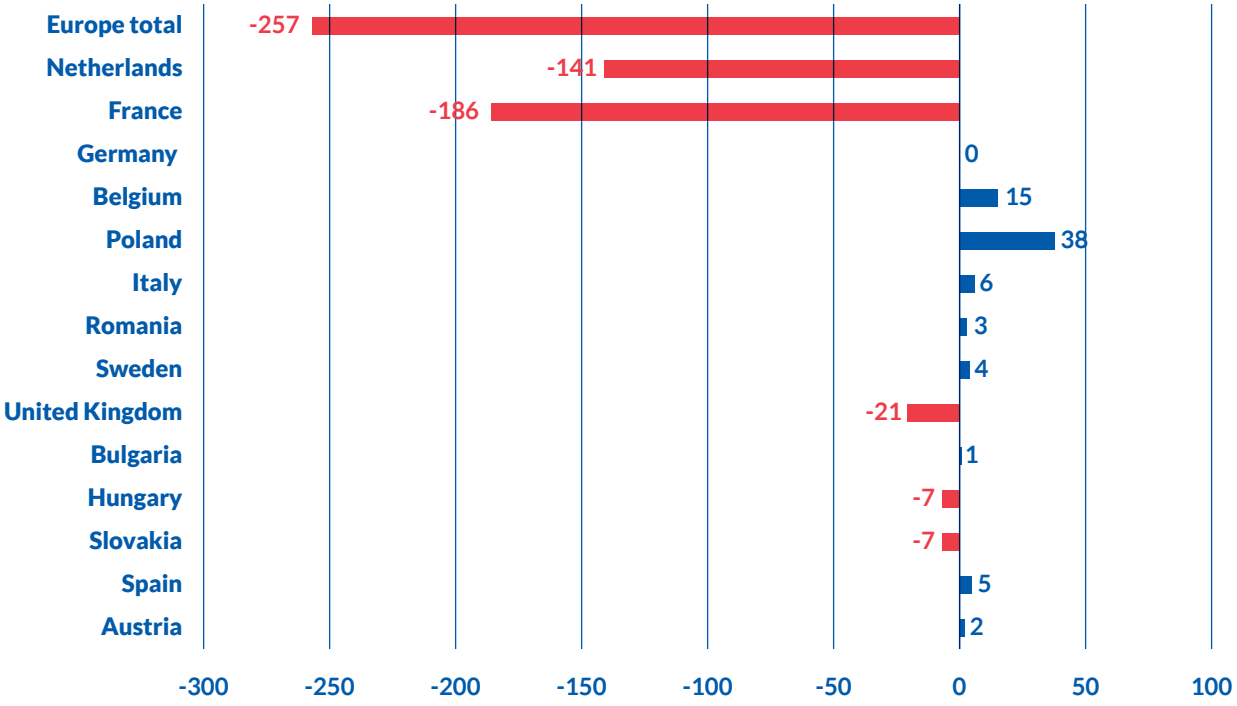


Sources: Eurostat [sbs_na_1a_se_r2] and Eidgenössische Steuerverwaltung (CH)
** For France, the values for 2013-2015 are estimated due to missing data. For Poland, data are missing for 2010 and 2011 and for Serbia data are missing for 2009-2015.*

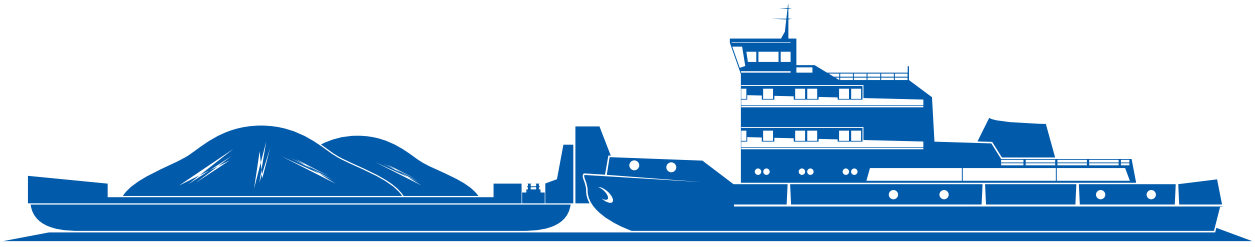
[25] It should be noted that figures obtained from national institutions are often higher than the figures obtained from Eurostat. This particularly applies to the case of Belgium. While Eurostat gives about 700 persons employed in 2017 in IWW goods and passenger transport, the two social security organisations ONSS (employees) and INASTI (self-employed) report 1,933 persons. However, for cross-country comparisons Eurostat is treated as the preferred source because data are harmonised across countries and are thus comparable.

If the number of freight companies in 2017 is compared to 2012, a decrease can be observed for Europe as a whole and for large IWW countries such as the Netherlands and France. The decrease in these two countries outweighed the increase in other countries.

FIGURE 5: **DIFFERENCE IN THE NUMBER OF COMPANIES IN IWW GOODS TRANSPORT IN 2017 COMPARED TO 2012**



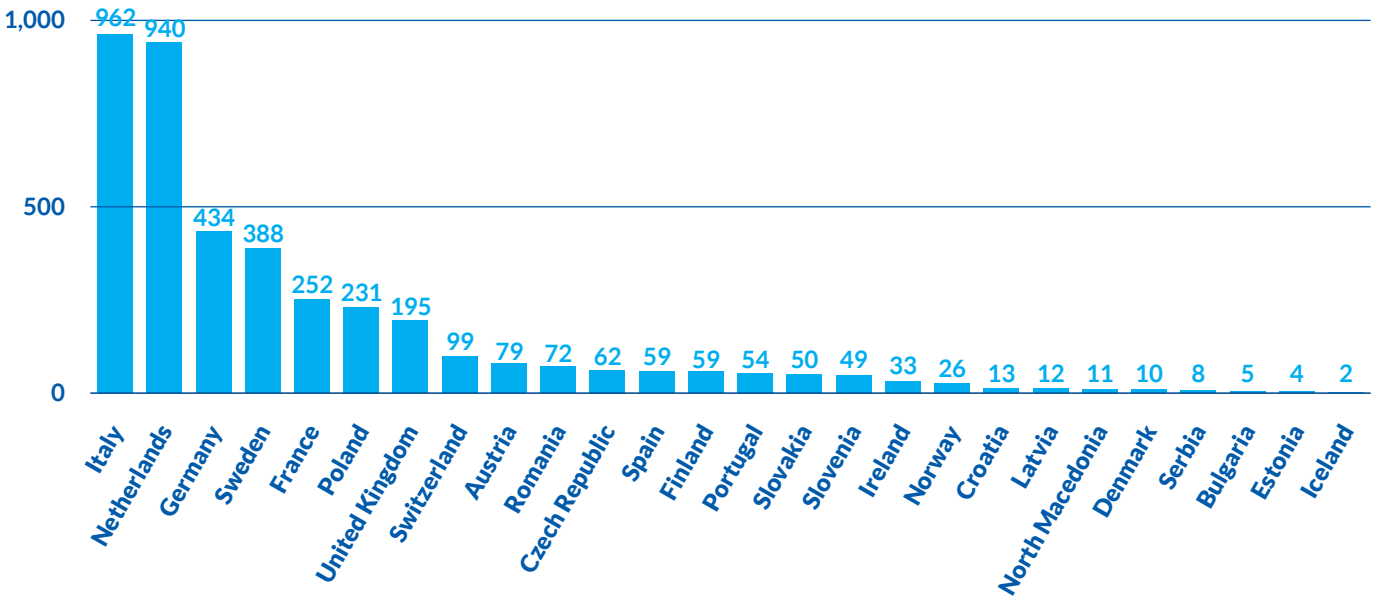
Source: Eurostat [sbs_na_1a_se_r2]



COMPANIES AND EMPLOYMENT
IN PASSENGER TRANSPORT

IWW passenger companies in Europe are active in different segments: river cruises, day trip navigation on rivers, canals and lakes. The ferry transport of passengers is also part of the sector. The first position of Italy is due both to the country's large number of lakes and the canal boats in Venice. The Netherlands have many day trip vessels, ferries on rivers as well as large and small cruise vessels.

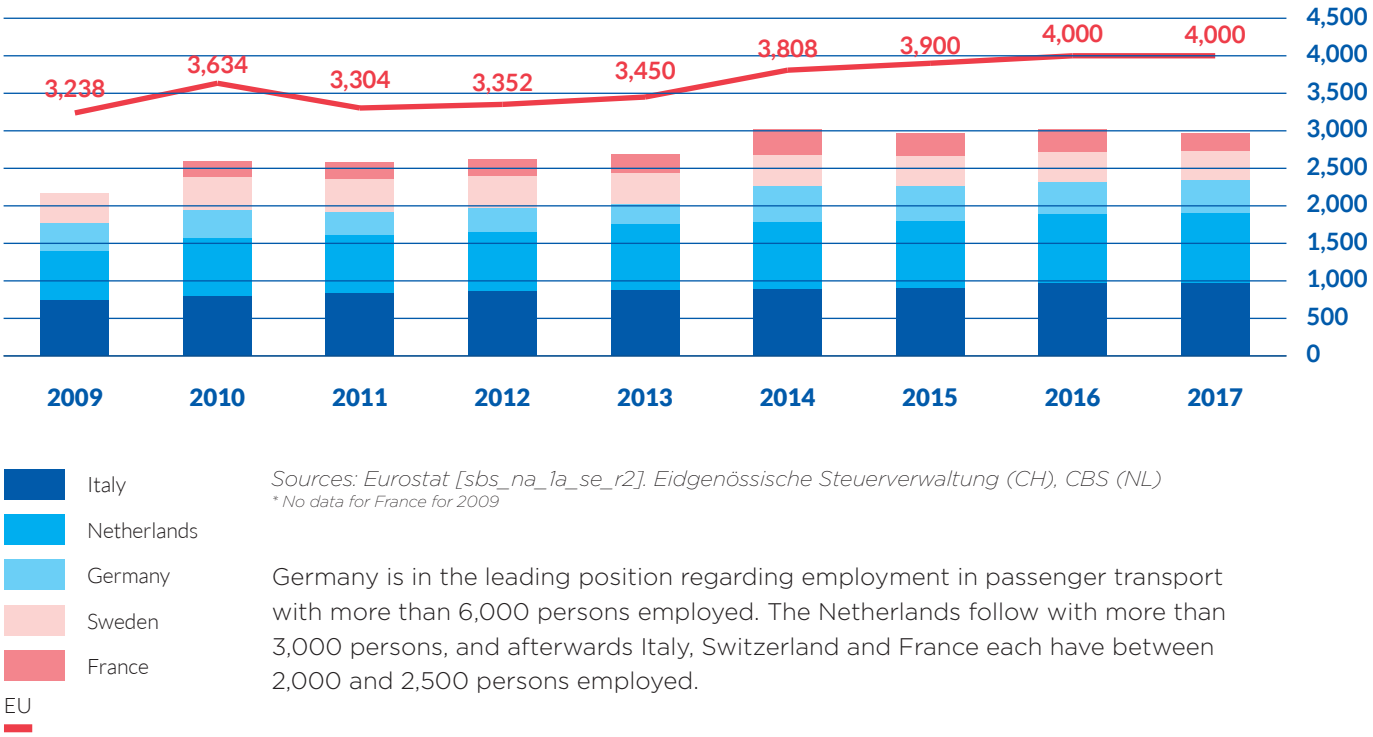
FIGURE 6: **NUMBER OF IWW PASSENGER TRANSPORT COMPANIES IN EUROPE***



Sources: Eurostat [sbs_na_1a_se_r2] and Eidgenössische Steuerverwaltung (CH)
** Data for 2017*

The evolution of the total number of European passenger transport companies has followed an upward trend since 2009. There are currently 4,000 companies active in this field of which 74.4% are found in Italy, the Netherlands, Germany, Sweden and France.

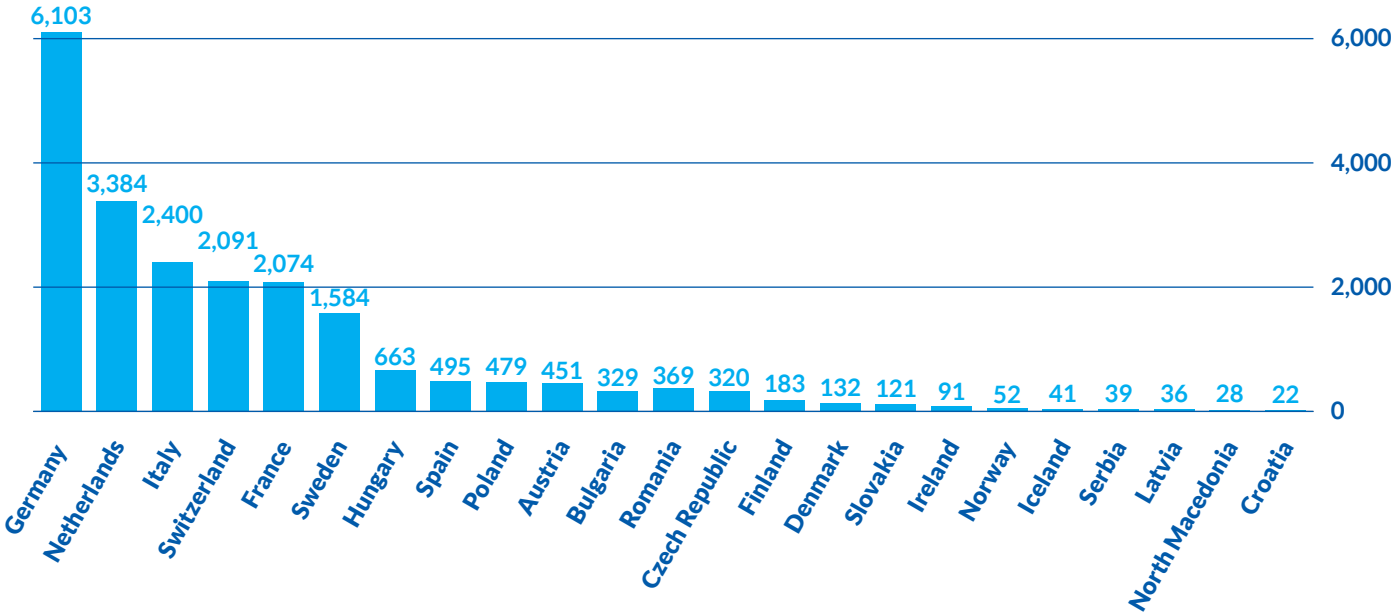
FIGURE 7: **EVOLUTION OF THE NUMBER OF IWW PASSENGER TRANSPORT COMPANIES IN EUROPE***



Sources: Eurostat [sbs_na_1a_se_r2]. Eidgenössische Steuerverwaltung (CH), CBS (NL)
** No data for France for 2009*

Germany is in the leading position regarding employment in passenger transport with more than 6,000 persons employed. The Netherlands follow with more than 3,000 persons, and afterwards Italy, Switzerland and France each have between 2,000 and 2,500 persons employed.

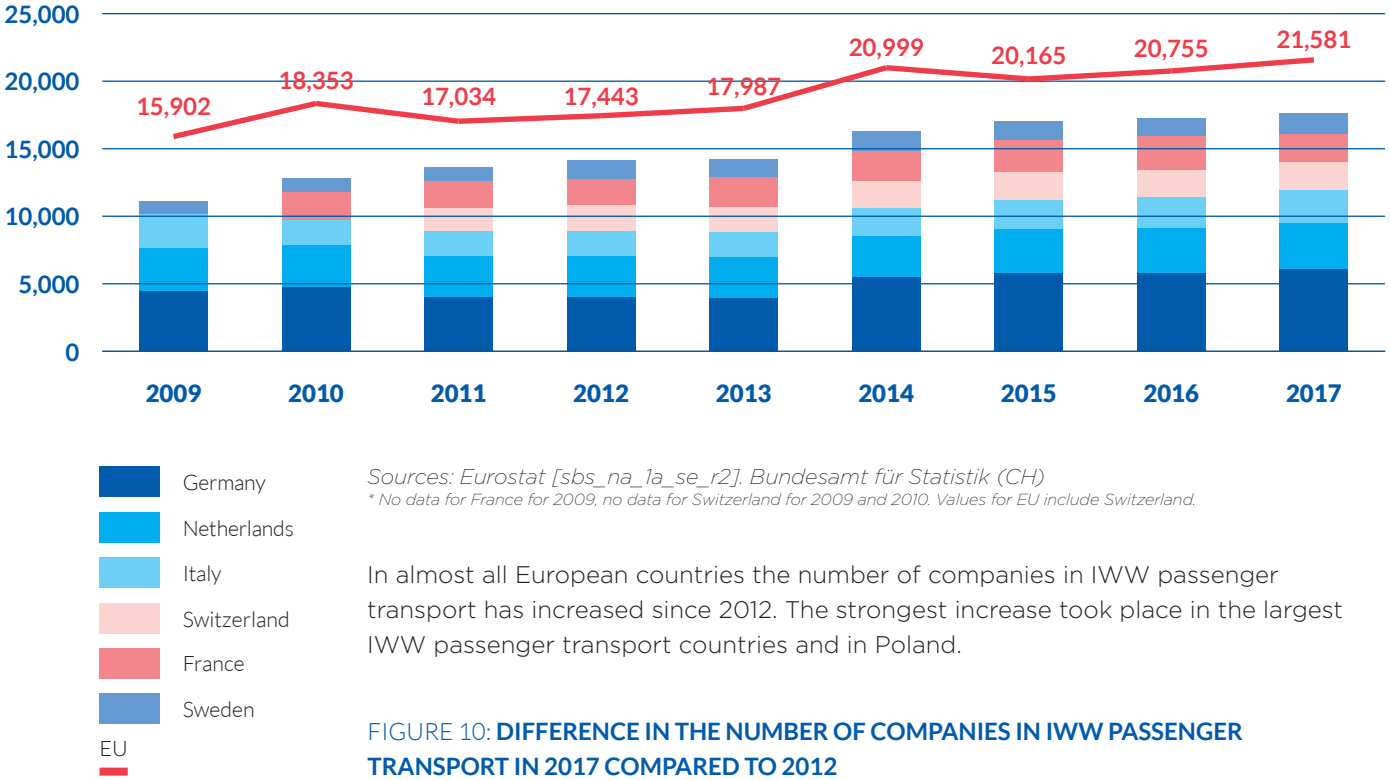
FIGURE 8: **NUMBER OF PERSONS EMPLOYED IN IWW PASSENGER TRANSPORT IN EUROPE***



Sources: Eurostat [sbs_na_1a_se_r2] and Bundesamt für Statistik (CH)
** Data for 2017*

The total number of persons employed in European IWW passenger transport amounts to 21,581 and is therefore slightly below the employment figures in freight transport. Around 82% of all persons employed in EU inland waterway passenger transport are employed in Germany, the Netherlands, Italy, Switzerland, France and Sweden.

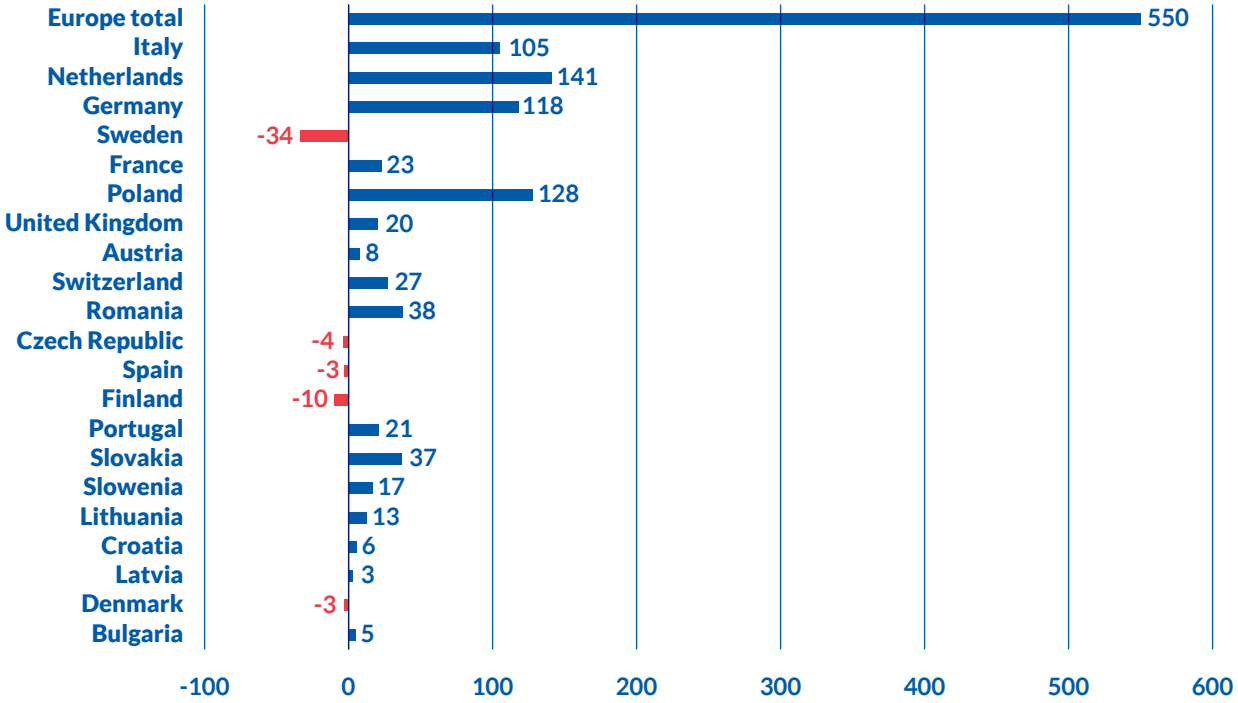
FIGURE 9: **EVOLUTION OF THE NUMBER OF PERSONS EMPLOYED IN IWW PASSENGER TRANSPORT IN EUROPE***



Sources: Eurostat [sbs_na_1a_se_r2]. Bundesamt für Statistik (CH)
** No data for France for 2009, no data for Switzerland for 2009 and 2010. Values for EU include Switzerland.*

In almost all European countries the number of companies in IWW passenger transport has increased since 2012. The strongest increase took place in the largest IWW passenger transport countries and in Poland.

FIGURE 10: **DIFFERENCE IN THE NUMBER OF COMPANIES IN IWW PASSENGER TRANSPORT IN 2017 COMPARED TO 2012**



Sources: Eurostat [sbs_na_1a_se_r2] and Eidgenössische Steuerverwaltung (Swiss Tax Administration)

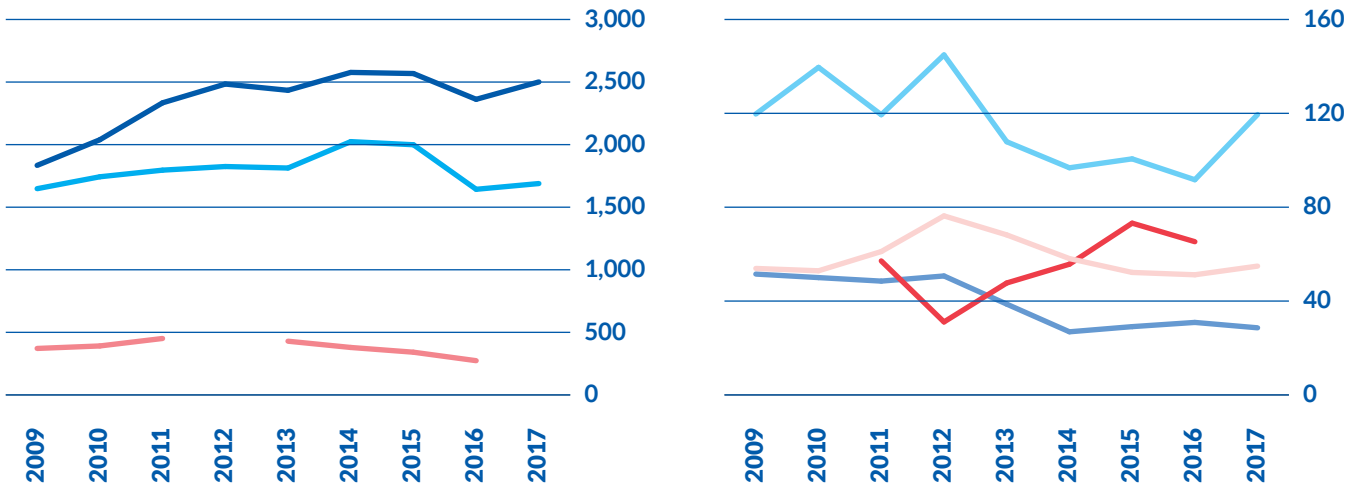
TURNOVER, OPERATING RATE, PERSONNEL COSTS
PER EMPLOYEE

Netherlands
Germany
France
Romania
Hungary
Slovakia
Bulgaria

TURNOVER AND OPERATING RATE IN IWW FREIGHT TRANSPORT

Although Danube countries have a share of 18% in transport performance, their share in EU turnover is much lower, due to a lower wage and price level.

FIGURES 11 AND 12: **ANNUAL NET TURNOVER IN IWW FREIGHT TRANSPORT** (IN MIO. €)



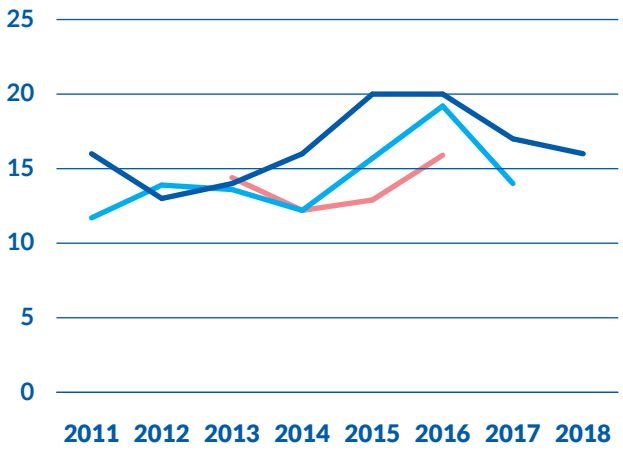
Sources: Eurostat [sbs_na_1a_se_r2], CBS, CCNR analysis

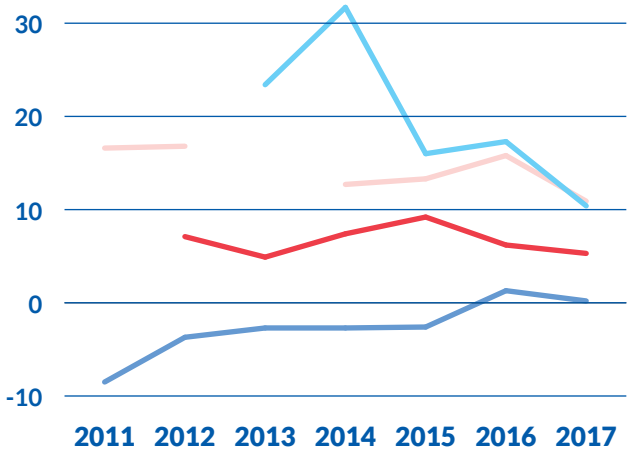
The share of the operating result (profit) in net turnover gives the operating rate, which is an indicator for profitability. For the Netherlands, this indicator was calculated based on CBS data. For other countries, the Eurostat database SBS offers figures, but unfortunately not for all countries and years.

Netherlands
Germany
France
Romania
Bulgaria
Slovakia
Hungary

The Dutch freight sector reached an operating rate of 20% in 2015 and 2016, 17% in 2017, and 16% in 2018. The operating rate curves for Germany and France lie below the Dutch curve. Hungary had a negative operating rate until 2015. This means that, on average, the freight business activity generated losses for Hungarian companies between 2011 and 2015. In 2016 and 2017, the operating rate in Hungary was slightly positive.

FIGURES 13 AND 14: **RATIO OF OPERATING RESULT AND TURNOVER - OPERATING RATE - IN FREIGHT TRANSPORT** (IN %)





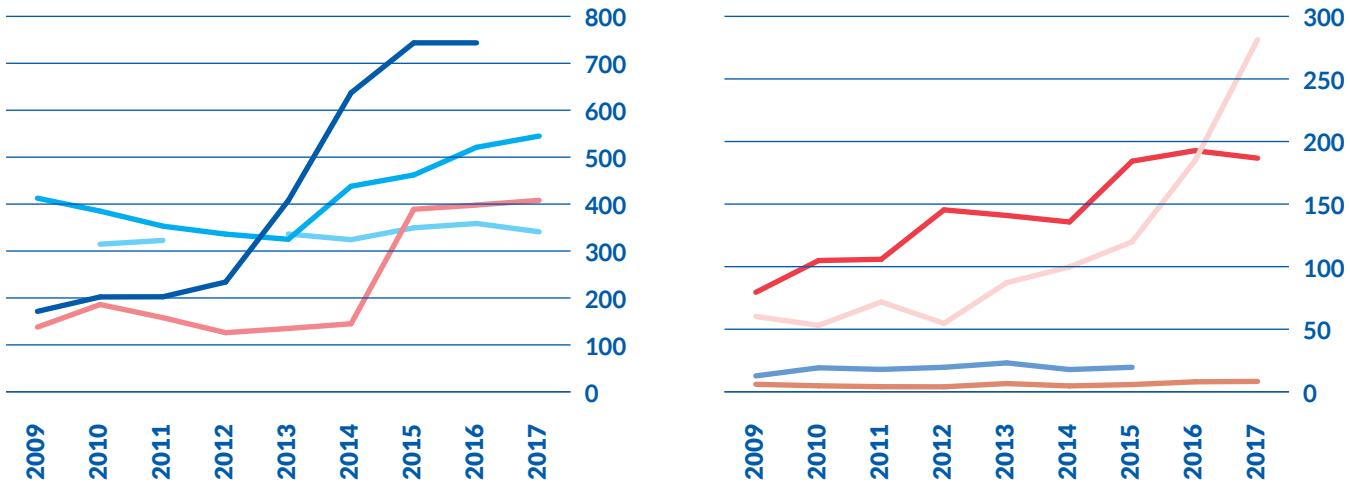
Sources: Eurostat [sbs_na_1a_se_r2], CBS, CCNR analysis. The data for the Netherlands were calculated by dividing the operating result for freight and passenger transport by the net turnover in freight and passenger transport. However, CBS estimates that 92% of turnover in Dutch IWT is generated by freight transport and 8% by passenger transport. A split between freight and passenger operating result data is not available for the Netherlands.

TURNOVER AND OPERATING RATE IN IWW PASSENGER TRANSPORT

For passenger transport, Switzerland has the highest turnover in Europe followed by Germany, Italy and France. Data for Switzerland were taken from the Swiss Tax Administration database, which produces turnover and other financial data for all economic sectors in Switzerland (via the information on the added value tax paid in each sector). Data for other European countries were taken from the Eurostat database on Structural Business Statistics (SBS).

From 2013/2014 onwards, turnover increased strongly in Switzerland, but also for German, Italian and British companies. There is a strong correlation with the demand in river cruises, which also had a take-off phase during these years (see chapter on river cruises, figure on number of passengers). The fact that companies in the United Kingdom show a sharply rising turnover is also reflected by the growing presence of British tour operator companies in the river cruise industry.

FIGURES 15 AND 16: **ANNUAL NET TURNOVER IN IWW PASSENGER TRANSPORT** (IN MIO. €)



Switzerland
Germany
Italy
France
United Kingdom
Sweden
Hungary
Romania

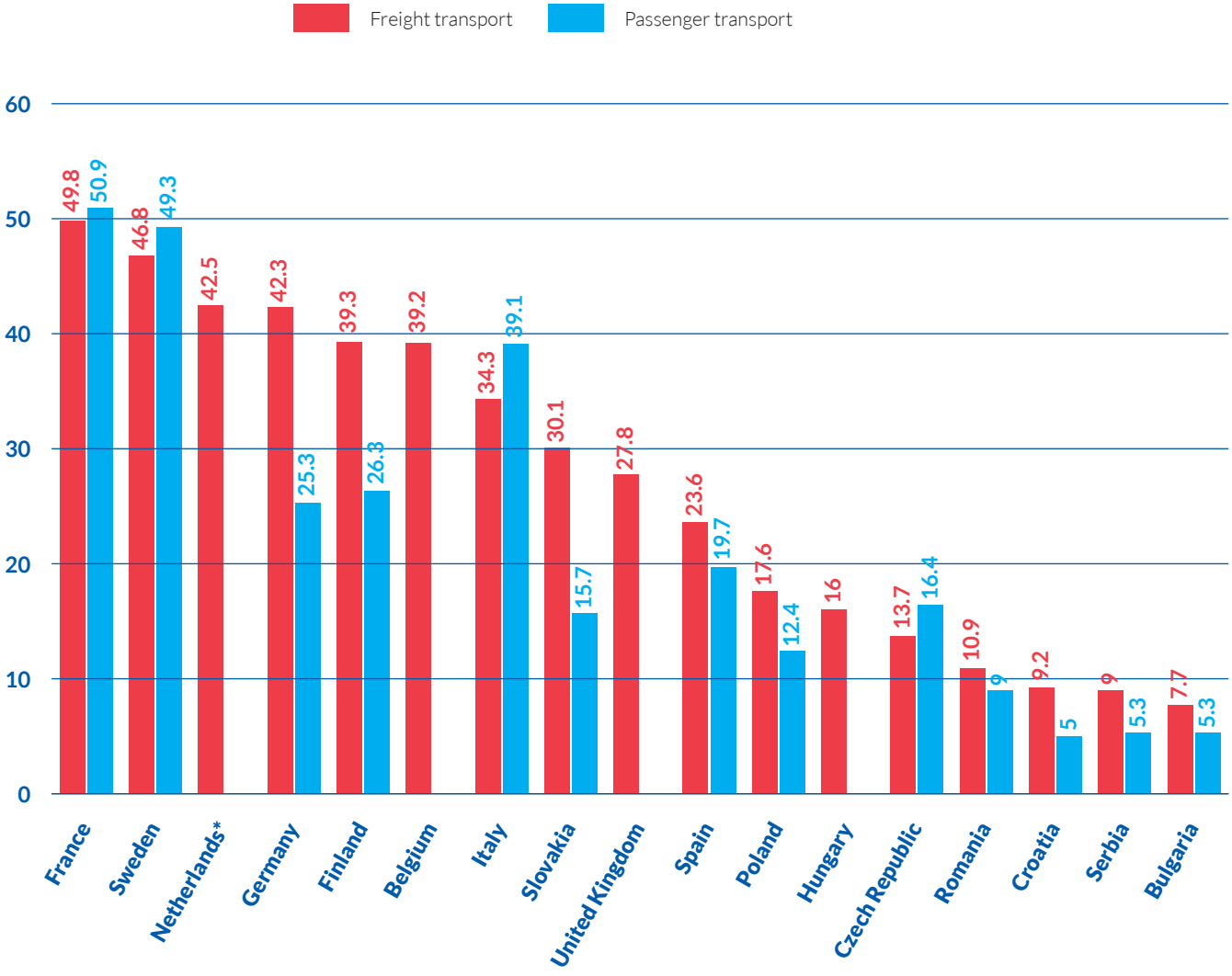
Sources: Eurostat [sbs_na_1a_se_r2], Eidgenössische Steuerverwaltung (Swiss Tax administration), analysis CCNR

In German passenger transport the operating rate increased strongly from 2013 onwards and attained 30% in 2017.

PERSONNEL COSTS PER EMPLOYEE

Danube countries are clearly the countries with the lowest personnel costs per employee, due to a lower wage and price level compared to western Europe. France and Sweden have the highest personnel costs per employee.

FIGURE 17: **AVERAGE ANNUAL PERSONNEL COSTS PER EMPLOYEE IN IWW TRANSPORT** (IN 1,000 € / EMPLOYEE, 2017) *



Sources: Eurostat [sbs_na_1a_se_r2], CBS, CCNR analysis

** For the Netherlands, the value represents personnel costs per employee in freight and passenger transport taken together, but freight transport has a 92% share in overall financial activity. The data on personnel costs have been taken from the national statistical office CBS, as Eurostat does not publish data on this indicator for the Netherlands. A split of personnel costs between freight and passenger transport is not available in the CBS data.*

07

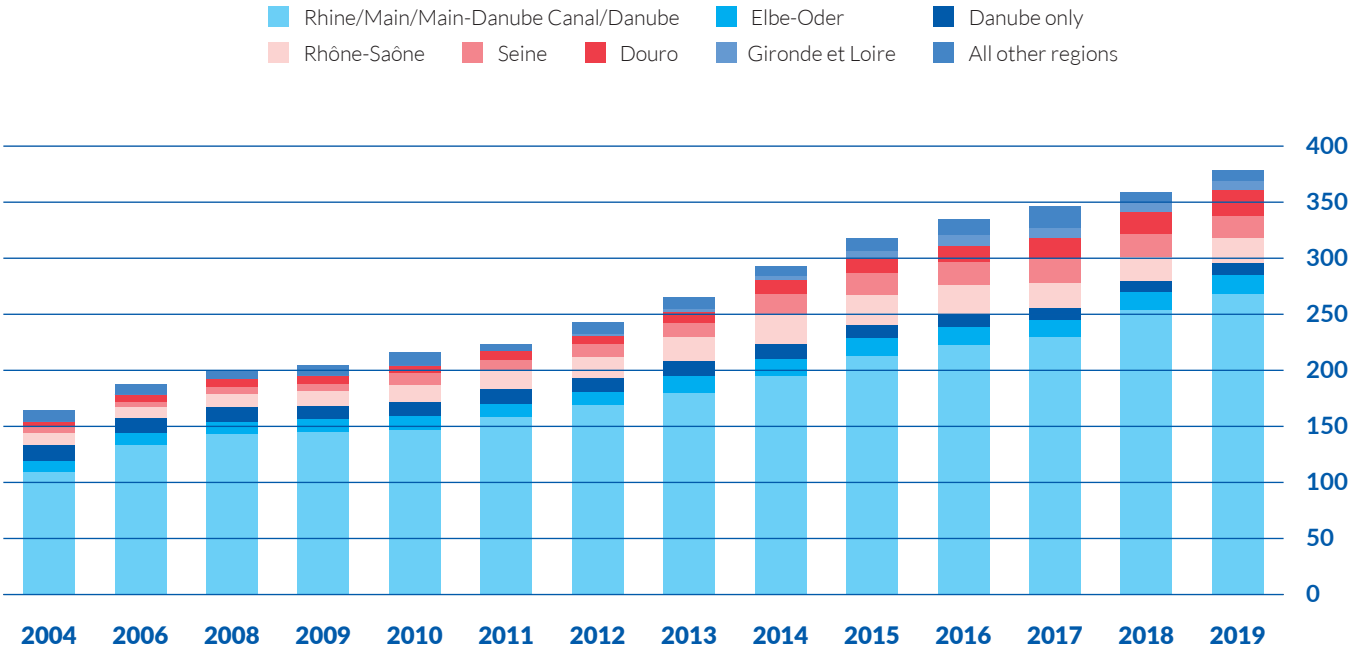
RIVER CRUISES

- In 2019, the European river cruise sector continued to grow compared to 2018, reaching 378 active vessels with 54,814 beds. The newbuilding rate was high with 19 new vessels entering the market.
- A second growth indicator for the European inland cruising sector in 2019 is the nearly 10% growth in demand, reaching 1.79 million passengers (of which 44% to 49% came from non-European countries).
- Growth in river cruise vessels traffic is also a sign of the positive development in the sector both on the Rhine (+24% compared to 2018) and the Danube (in particular +30% for the Middle Danube and almost +35% for the Lower Danube).

FLEET FOR RIVER CRUISES[26]

Europe has the largest cruise fleet today, followed by the Nile and other African rivers. The active cruise fleet in Europe represents more than 40% of the world active cruise fleet. The fleet for river cruises in the EU region is mainly concentrated on Central European waterways[27] (close to 75% of the total river cruise fleet in the EU). The river cruise fleet in Europe[28] has constantly increased since 2004, to reach 378 active vessels in 2019 with 54,814 beds (compared to 359 in 2018 with 52,078 beds).

FIGURE 1: **NUMBER OF RIVER CRUISE VESSELS IN THE EU BY REGION OF OPERATION** (2004 – 2019)



Source: Hader, A. (2019), The River Cruise Fleet

In the 2019 season, 19 entirely new vessels were introduced to the market. One more vessel also re-joined the active cruising market after a long lay-up phase. One other was removed from the database.

The high number of new cruise vessels in 2019 (almost two times higher than in 2018) can be explained by an increase in demand from US-American customers and a healthy demand in the German speaking market. Out of these 19 new vessels,

[26] *Hader, A. (2019), The River Cruise Fleet*
[27] *Rhine, Main, Main-Danube Canal, Danube, Elbe-Oder*
[28] *The European River cruise fleet, as it is defined in this report (cruise vessels with more than 39 beds), comprises the fleet in the EU and in Switzerland.*

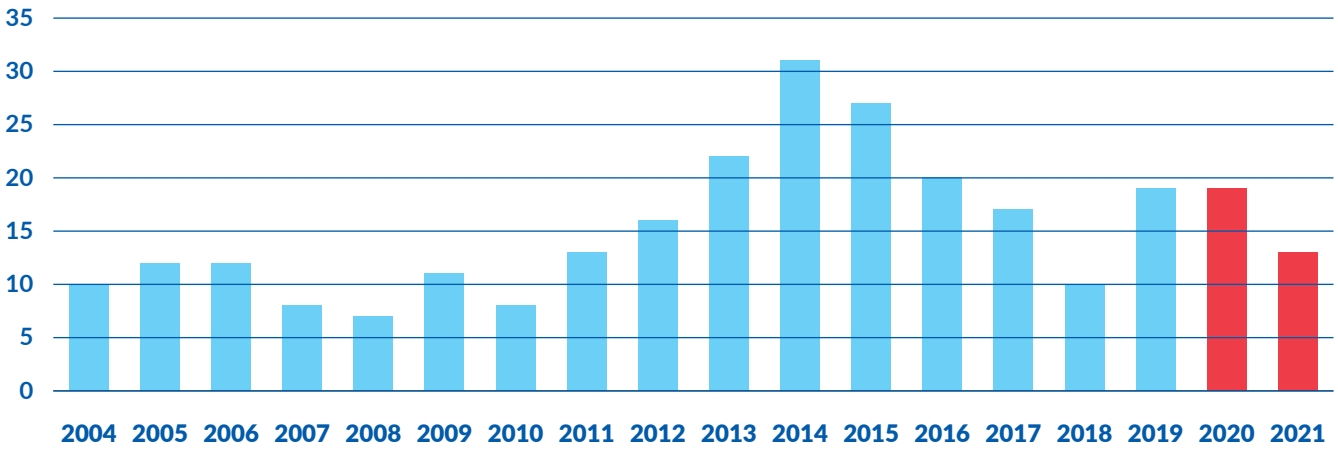
14 joined the fleet operating on Central European waterways, one joined the fleet operating on the Danube only and four will navigate on the Douro. For the Danube, the new cruise vessels that entered the market enjoyed an increased comfort, an increased energy efficiency and a draft of about 1.8 m.

Nineteen new buildings were also expected to join the market in 2020: 13 on central European waterways, two on the Douro and four on the Seine. Seven were expected to be dedicated to the German speaking market, which was far greater compared to the last years.

The order book for new river cruise vessels in 2020 considered in this chapter pre-dates the Covid-19 crisis, which heavily affected the river cruise segment in 2020 and will affect it also during the 2021 and 2022 seasons. The impact of the Covid-19 crisis on the newbuilding activity is expected to be felt in 2021 and 2022.

19 entirely new cruise vessels were introduced to the European market in 2019

FIGURE 2: **NEW RIVER CRUISE VESSELS FOR THE EUROPEAN MARKET 2004-2021 ***



Source: Hader, A. (2019), The River Cruise Fleet
** 2020: forecast based on order books. * 2021: on order in May 2020.*

Depending on the shipyard, it can take up to 12 months to build a river cruise vessel. Moreover, new river cruise vessels are usually delivered at the beginning of the season or in the summer period, at the latest. Therefore, for the year 2020, the construction of most of the new cruise vessels ordered are already being finalised.

For the 2021 season, many newbuilding contracts have already been signed, in some cases building has already started, or at least some parts of the ship are already in production. Given the strong economic impact of the Covid-19 crisis on the river cruise sector, companies are experiencing financial difficulties, and some mitigation measures may be taken, for instance, by postponing some contracts or staggering payments for such contracts.

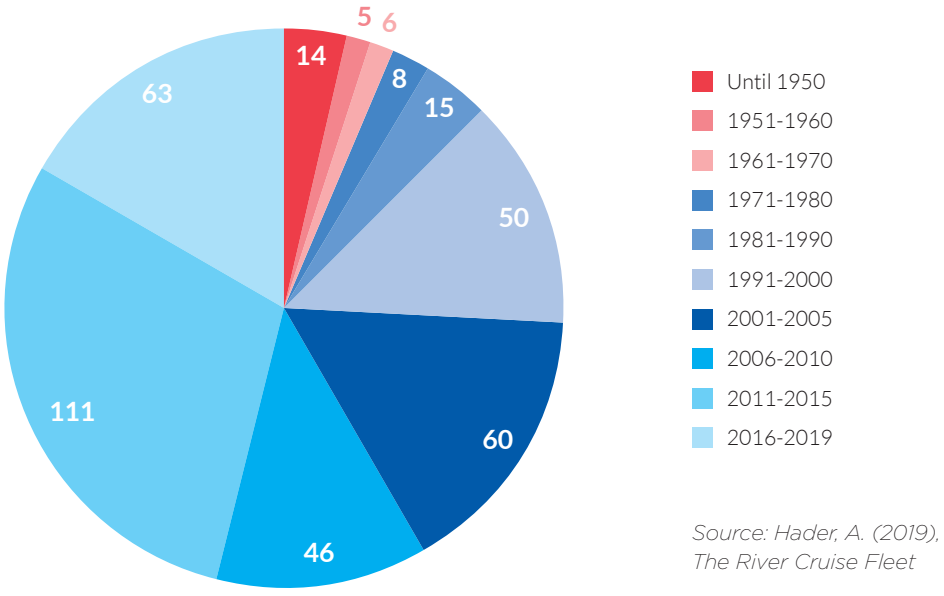
As well as creating difficulties in relation to ongoing contracts, the number of new constructions may also decrease in 2021 and 2022. Indeed, early in 2020, newbuilding contracts foreseen for the year 2021 were supposed to be confirmed, but for some, the confirmations did not take place.

An example of this was in 2016 - following the 2015 terrorist attacks in Paris – when for several months fewer US-American tourists visited Europe, and the number of new river cruise vessels decreased in 2016, 2017, and 2018, to pick-up only in 2019 and 2020 (forecast). This example suggests that 2022 may in part be the year when the impact of the Covid-19 crisis on newbuilding constructions will be felt.

It is possible that the Covid-19 crisis leads to a withdrawal of some existing river cruise vessels from the market in 2020 and 2021. Since 2005, 27 vessels have been withdrawn from the EU river cruise fleet, including five during the 2009 economic crisis.

The river cruise fleet in Europe grew by **220** vessels between 2006 and 2019.

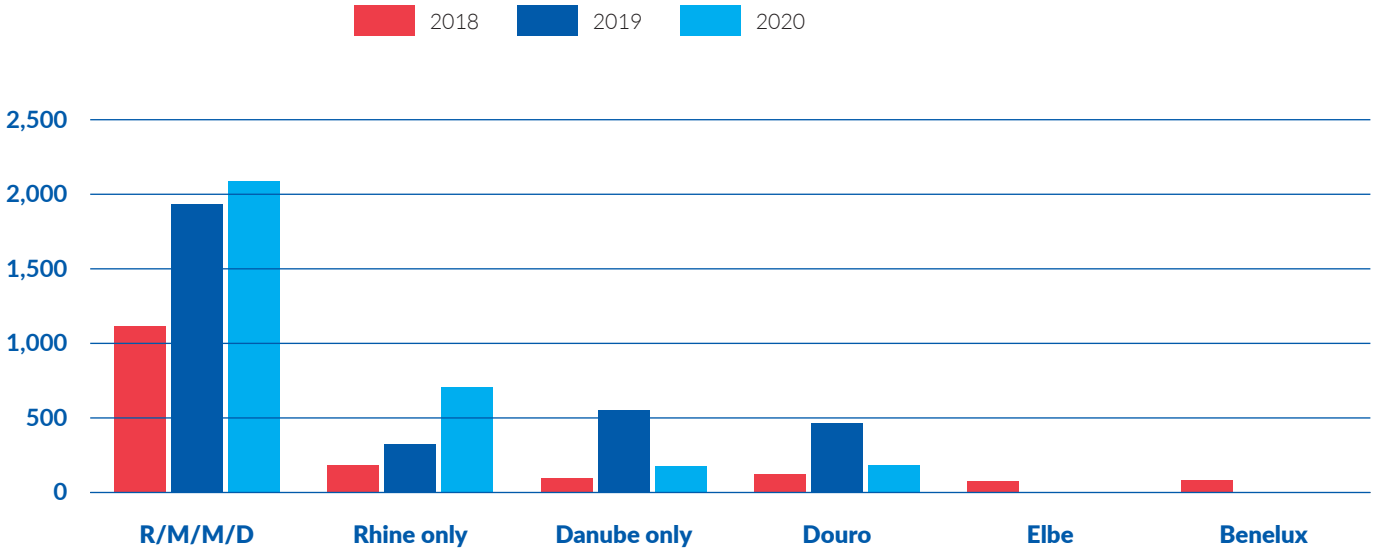
FIGURE 3: **NUMBER OF RIVER CRUISE VESSELS IN THE EU BY YEAR OF CONSTRUCTION**



Source: Hader, A. (2019), The River Cruise Fleet

In 2019, the 19 new vessels brought an additional capacity of 3,131 beds to the river cruise market in Europe. However, the net increase of the capacity in 2019 is 2,769 beds (+5.3%). In 2020, the extra capacity should be 3,158 beds, for the same number of new vessels expected to join the market.

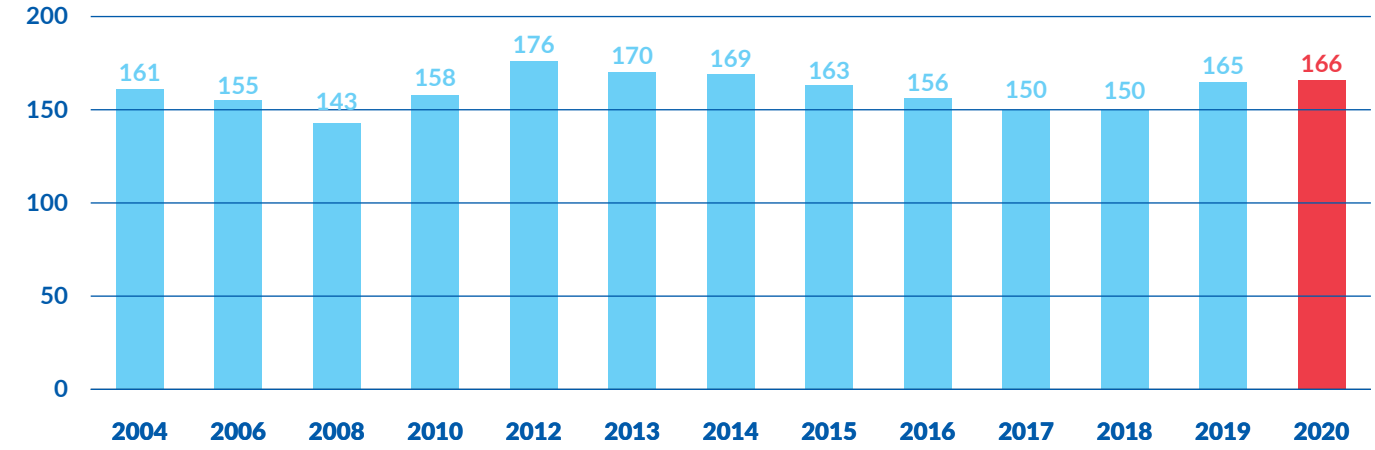
FIGURE 4: **NEW CRUISE CAPACITIES IN 2018, 2019 AND 2020 PER REGION OF OPERATION** (NUMBER OF BEDS) *



Source: Hader, A. (2019), The River Cruise Fleet
** R/M/M/D = Rhine/Main/Main-Danube Canal/Danube. In 2018, the new beds in the Danube and the Benelux (181 beds) are the result from conversion or modernisation of existing vessels. In 2019, 150 new beds on the Rhine are also the result of conversion of an existing vessel. 2020: forecast based on order books.*

As for the number of new buildings, and based on order books, the average number of beds in new cruise vessels seems to be rising again, after a decrease between 2014 and 2018. Indeed, seven large cruise vessels with a high passenger capacity (190 beds) came on the market in 2019 and navigate on the Rhine/Main-Danube canal. In addition, the AMAMAGNA, the largest river cruise vessel ever built for Europe, with 196 beds, also joined the market in 2019 and navigates on the Danube only.

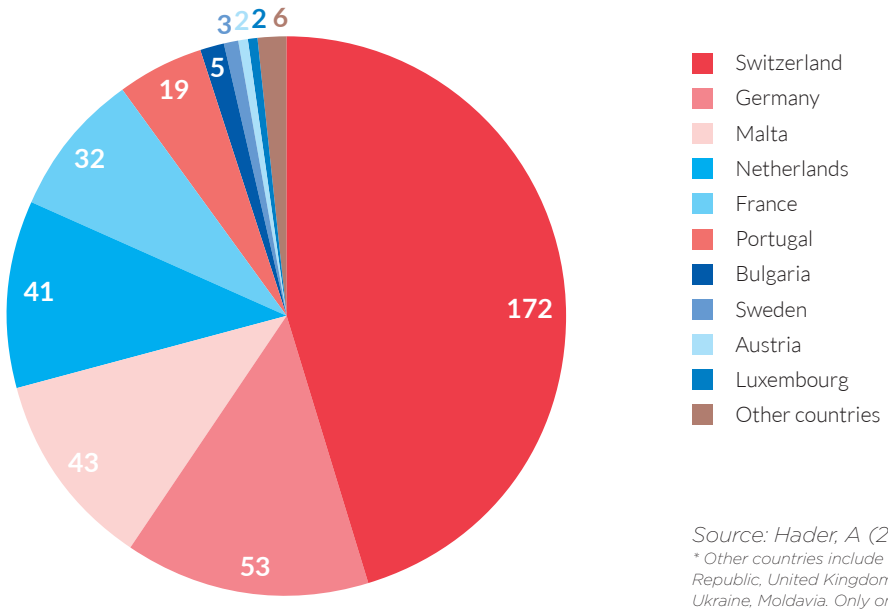
FIGURE 5: **AVERAGE NUMBER OF BEDS IN NEW RIVER CRUISE VESSELS IN EUROPE BY YEAR OF CONSTRUCTION ***



Source: Hader, A. (2019), The River Cruise Fleet
** Figure for 2020: forecast*

Switzerland (172 vessels) is the country with the highest number of registered river cruise vessels. It also has a large share on the Rhine and Danube as well as on the Rhône-Saône and on the Seine. In second position comes Germany, where 53 river cruise vessels are registered, which mostly operate on the Rhine and Danube.
There are also as many river cruise vessels registered in Malta and in the Netherlands with respectively 43 and 41 vessels.

FIGURE 6: **RIVER CRUISE VESSELS REGISTERED IN THE EU IN 2019**
(IN NUMBER OF VESSELS) *



Source: Hader, A (2019)
** Other countries include Belgium, Czech Republic, United Kingdom, Poland, Ukraine, Moldavia. Only one river cruise vessel is registered in each.*

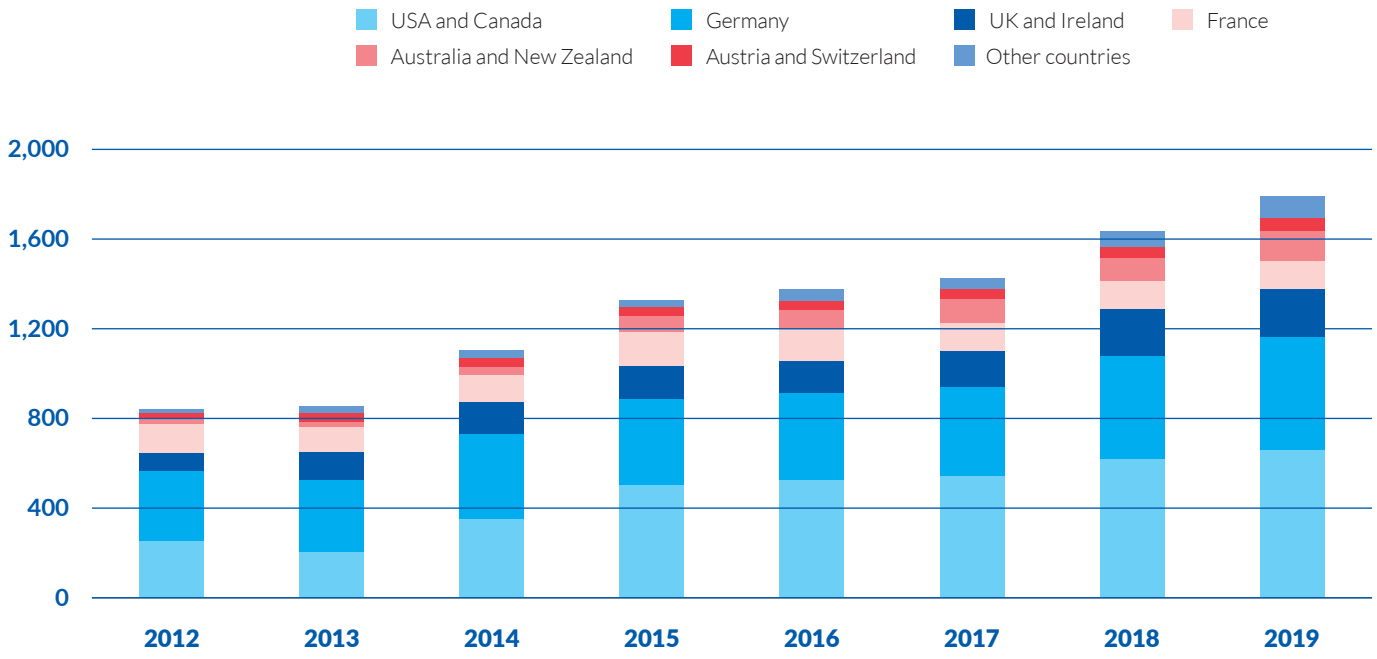
Vessels registered in the Netherlands sail mainly on Dutch rivers, the Rhine and the Main-Danube Canal, while those registered in Malta sail mainly in the Rhine-Main-Danube area and occasionally in France. 32 river cruise vessels are registered in France, sailing mainly on French waters and in the Rhine/Danube areas. 19 vessels are registered in Portugal, sailing almost exclusively on the Douro. The region where there are the most important number of river cruise vessels registered in different countries remains the Rhine/Danube area.

DEMAND FOR RIVER CRUISES

The 2019 figures revealed by SeaConsult and IG River Cruise (the European River Cruise Association representing approximately 70% of the operators active in Europe) show that the European river cruise sector was in a healthy state before the Covid-19 pandemic. The number of river cruise passengers continued to increase in 2019 to reach a level of 1.79 million passengers (+9.9%).

For the European river cruise market, in 2019 the US-Americans and Canadians remained the most important source market for the fifth year in a row with a share of 36.7%, followed by Germans (28.3%). The British and Irish (11.8%) come in third position, followed by Australians and New Zealanders (7.5%), recording a significant growth of 30% compared to 2018, and the French (7.1%). Other countries represented 4.4% in 2019, an increase driven by a higher number of Chinese passengers cruising in Europe.

FIGURE 7: **NUMBER OF PASSENGERS ON EUROPEAN CRUISE VESSELS BY NATIONALITY** (IN 1,000)



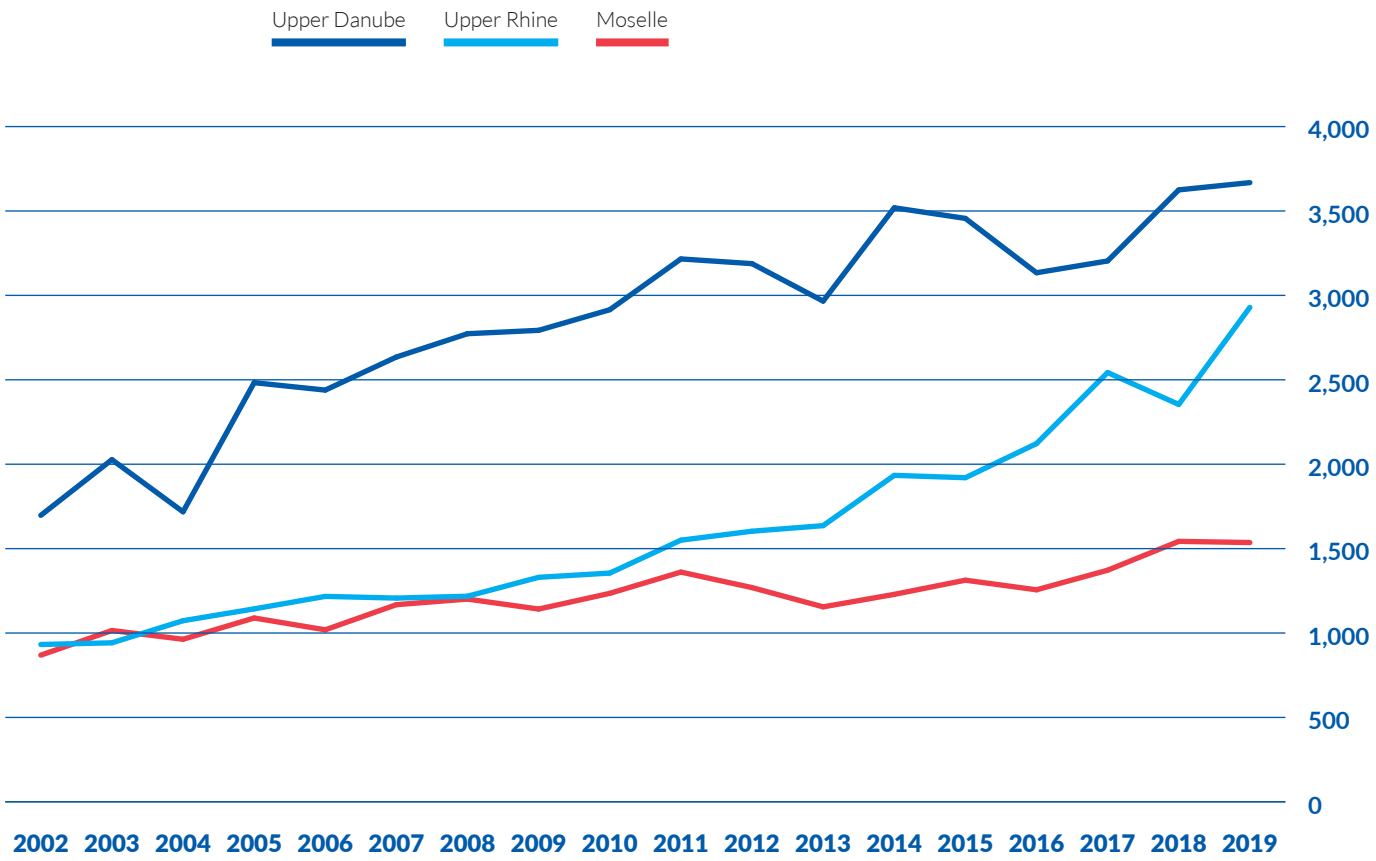
Sources: SeaConsult, IG River Cruise (2019), Der Fluss-Kreuzfahrtmarkt 2019

In Germany, the number of river cruise passengers rose by 9.0% in 2019, and ticket sales by 10.5% compared to 2018, which was also a year where a strong increase in ticket sales had been recorded (+18%).

The average age of river cruise passengers in Germany increased in 2019, with 84.1% of all German passengers being over 56 years old. Almost 35% were in the 56 to 65 range-bracket (compared to 26.7% in 2018, which saw a wave of younger passengers). The 26 to 40 age group decreased to a 3.8% share in 2019 (8.3% in 2018) as well as the 41 to 55 age group whose share was 10.3% in 2019 (18.3% in 2018).[29]

The number of cruise vessels passing through the lock of Iffezheim on the Upper Rhine was 2,929 in 2019, which represented a strong increase of 24% compared to 2018. Cruise vessel traffic on the Upper Danube at the German-Austrian border downstream of Passau was 1.2% higher in 2019, with 3,668 vessels passing the lock of Jochenstein.[30]

FIGURE 8: **YEARLY NUMBER OF CRUISE SHIP TRANSITS ON EUROPEAN RIVERS**



Source: German Waterway and Shipping Administration
** Sum of upstream and downstream traffic of cabin vessels at the following locks: Jochenstein (Danube), Iffezheim (Rhine), Koblenz (Moselle)*

[29] *Source: IG River Cruise / DRV / SeaConsult (2019), Der Fluss-Kreuzfahrtmarkt 2019*
[30] *The statistics for most other German rivers were not available in 2019, due to the abolition of user charges on inland waterways in Germany.*

Passenger transport with cabin vessels on the Danube exists in two major forms:

1) Short trips: trips of five, seven or eight days on the routes Passau-Vienna-Bratislava-Budapest-Passau and Vienna-Bratislava-Budapest, as well as trips from and to the Rhine and Main ports.
2) Long trips: trips from Passau to Vienna and to the Danube delta with a duration of 14, 15 or 16 days.

Cruise vessel traffic on the short trips from Passau to Vienna and to Budapest is more intense than on the long trips, as the following table shows. Short trips go only to Budapest and are therefore not crossing the southern border of Hungary with Croatia and Serbia.

TABLE 1: **CRUISE VESSEL TRAFFIC ON THE DANUBE IN 2019, NUMBER OF PASSENGERS AND INCREASE COMPARED TO 2018** (IN %)

Point of data collection	Number of vessel transits	Number of passengers
German-Austrian border	**3,668 (+1.2%)**	**512,500 (+0.94%)**
Slovakian-Hungarian border	**5,141 (+30.0%)**	**720,800 (+31.2%)**
Hungarian-Croatian-Serbian border	**1,017 (+34.9%)**	**135,040 (+30.3%)**

Source: Danube Commission Market Observation. Points of data collection: Jochenstein (border DE/AUT), Gabčikovo (border SK/HU), Mohács (border HU/CRO/RS)

The increase of 30% and more on the Danube stretch between the Slovakian-Hungarian border and the southern Hungarian border with Serbia and Croatia is also a result of the drop in 2018, when passenger ships with a draught of more than 1.8 m already had to partially interrupt their journey in the area of the Upper Danube and transport passengers by bus from Vienna to Bratislava and Budapest.[31]

[31] *Source: Danube Commission Market observation*

08

OUTLOOK

- The Covid-19 crisis could lead to an estimated drop in IWW goods transport in 2020 of 20-25%. Danube ports data for March-April 2020 showed a decrease of 25-35%. Everywhere in Europe, passenger transport was almost at a complete standstill in the first half of 2020.
- Energy transition, in particular the phasing out of coal, and a stagnating or even declining steel production in western Europe, represent major challenges for inland navigation in western Europe over the coming 20 years. Concerning the Danube region, steel production is expected to grow further, due to a lower current steel intensity in Danube countries and catch-up effects.
- Container transport on inland waterways is heavily dependent upon maritime container transport and world trade. For some years now, world trade and seaborne trade have grown at lower rates, and this will be amplified further by the current pandemic crisis.

SHORT-TERM IMPACT OF THE COVID-19 CRISIS[32]

This part of the chapter "Outlook" takes account of the latest available information at the end of May 2020.

The consequences of the Covid-19 crisis for the economy overall, the transport and logistics sectors, including inland navigation (both goods and passenger transport) are and will continue to be severe. The impact of the pandemic on the sector is expected to be felt long after the health crisis comes to an end. Based on GDP forecasts for the EU for 2020 and a comparison with the results for the 2009 financial crisis, a possible reduction of freight transport activity of at least 20-25% is estimated. Available port figures for April 2020 seem to confirm this estimation. However, such effects will depend on the type of commodity, the type of company, and the country and region observed.[33]

There are four main ways in which the inland navigation transport chain has been/ is still impacted:

- reduction in freight volumes at all levels, as a result of reduced/stopped industrial production,
- substantial decline in freight volumes due to a major drop in demand,
- serious disruption of logistical flows, in particular border controls, entry bans, lack of crew and available infrastructure,
- dramatic decrease in passenger numbers due to the standstill in tourism.

Some transport segments were immediately hit by the crisis and with great strength. This was the case for passenger transport (both river cruises, day trips and ferry services). It also had a quick impact on goods transport segments related to sectors directly impacted by lockdown regulations (e.g. construction, automotive, mobility sectors, etc.) Other IWT segments were affected "with a delay" (e.g. liquid cargo, containers). Some sectors considered as essential for the survival of the economy and the population resisted better to the crisis, but the trends vary significantly from one region to another. As of May 2020, while the IWT volumes have stabilised, they remain at a low level. The economic situation of the sector remains tense. However, it is important to note that the Covid-19 crisis is not the only reason for the declines observed in the IWT sector, which are also explained by seasonable effects and the structural change in the energy sector.

[32] Sources: Stakeholder interviews, Ports mentioned in this part, Seatrade Cruise News, Binnenschifffahrt online, Travel Weekly, ABN AMRO, Entreprises Fluviales de France (E2F), German Federal Ministry of Transport and Digital Infrastructure, DVZ, NPI, Der Bundesverband der Deutschen Binnenschifffahrt (BDB), Centraal Bureau voor de Rijn en Binnenvaart (CBRB), BLN Schuttevaer, Maritime Executive

[33] The precise effects will only be known when port figures become available for the months of April, May and June.

For the whole inland navigation sector (goods and passenger transport together), the financial losses for the inland navigation sector are strongly dependent on the length and intensity of the crisis, which currently cannot be predicted. Such turnover losses could be at least 2.2 up to 4.4 billion euros for freight and passenger transport together, according to scenario calculations based on the turnover in IWW goods and passenger transport in the EU.

IMPACT OF COVID-19 ON IWT PASSENGER TRANSPORT

River cruise sector

The 2019 figures for passenger transport demand revealed that the European river cruise sector was in a healthy state before the Covid-19 pandemic. This is true for both river cruises and day-trip vessels, sectors for which the predictions expected for 2020 were optimistic until the start of the crisis. The crisis is dramatic for the sector, all passenger transport simply being stalled.

The Kiel Institute of World Economics assumes a 90% reduction in tourism, sport and entertainment. The Centraal Bureau voor de Rijn en Binnenvaart (CBRB) and BLN Schuttevaer in the Netherlands assumed in their loss estimations a 100% fall in passenger transport on inland waterways in the Netherlands in the first half of 2020.

An evolution supporting these assumptions is that in the first half of 2020, according to companies active in the river cruise sector, a drop in turnover of 90% has been recorded as well as liquidity outflow of several tens of millions of euros, while revenues were on a 5% level compared to normal for several companies.

A gradual reopening could allow to keep the sector afloat, at least until international cruising is no longer restricted, given that European passengers account for almost 40% of passengers cruising on European waterways.

Intra-EU/national passenger transport is expected to start operating again first. This is in line with the proposal of the branch organisation *Entreprises fluviales de France* (E2F) to reorient river tourism towards national and local tourism in the short-term, since it has been deprived of its international clientele.

Indeed, some river cruises resumed sailing on German rivers on 1st June. This is the case for Nicko Cruises which launched the first cruise with its vessel the *nickoVISION* for a cruise from Straubing in Bavaria along the Danube and Rhine rivers to Dusseldorf. So far, travel bans have meant that the cruises were limited to national tourism, and European river cruise lines anticipate that the restrictions will be further reduced by mid-June. Currently, river cruise lines catering to mostly German and European passengers, including A-Rosa, Phoenix Reisen, Plantours, and Scylla, have also announced plans to resume their trips by the end of June, while CroisiEurope plans a gradual restart from mid-July.

In the long run, the prosperity of the passenger sector can however only be ensured if overseas passengers resume travelling on European waterways. Two reasons for this not materialising soon can be identified: they do not want to (because of the health risks) or they are not allowed to (flights are cancelled, strict travel restrictions apply, etc.) Another aggravating factor regarding the river cruise segment is the average age of river cruise passengers. Indeed, river cruises are popular among people over 55 who are also the most at risk from the virus. They are likely to be more reluctant to resume international travel after the crisis, even after the lifting of travel restrictions. According to recent news, the lines that market mostly to international travellers are expecting a later return to service. For example, AmaWaterways has now cancelled its cruises until the end of July, while Viking's river cruises in Europe are cancelled until the end of August.

Expectations are that not only the year 2020 will be heavily impacted but 2021 will also be affected, partly due to vouchers that are issued in 2020 for cruises that were cancelled due to Covid-19 but which will have to be redeemed in 2021.

Despite support measures from several European states to avoid bankruptcies in the passenger shipping sector, this may still materialise if bookings (from tourists from overseas as well as from Europe) are not initiated.

Day trip excursions

In Paris, 61% of all passengers on day trip vessels were foreigners in 2017, while this share was only 54% in 2014. Such indications are also certainly true for many regions in Europe. For instance, in Strasbourg, also a city with many international tourists, the number of passengers decreased by 94% in March for the BATORAMA day-trip company (operated by the Port of Strasbourg). This figure did not reach 100% as some vessels were still navigating at the beginning of March. By the end of May, the BATORAMA day trip tours had restarted, but with a limited number of passengers. On the river Rhône, the number of passengers decreased by 96.4% in March 2020 and by 100% in April 2020 compared to the previous year.

Ferry traffic

The ferry sector was also seriously hit by the Covid-19 pandemic. The position and market of the ferry sector is noticeably different from the day trip sector. Ferry services play an important role in regional passenger mobility. On the one hand they are part of the inland shipping sector, but on the other hand they should - as "floating bridges" - also be considered as part of the secondary road infrastructure.

Ferry services are - as opposed to both the day trip sector and the river cruise sector - part of the vital infrastructure. Therefore, the sector had to continue sailing, but the passenger numbers dropped dramatically: depending on the type of ferry service (utilitarian or touristic) and the type of passengers (commuters, students, other types of vehicles), 60 – 90% fewer passengers were estimated. Where possible, the ferry sector tried to reduce costs by combining connections, reducing sailing frequency in the off-peak hours, or limiting opening hours.

Next steps

As of today, strong uncertainties still exist as to when passenger transport will relaunch to its usual levels, in particular due to ongoing restrictions in international travel. It is expected that many companies will not survive this financial collapse.

How to relaunch the activity in a profitable way while guaranteeing health standards on vessels, thereby rebuilding the confidence of potential passengers, will therefore continue to remain the key questions in the coming months. Indeed, there might be no added value in relaunching the activity if the health restrictions do not make it profitable for the river cruise companies to operate. The sector is actively working on its exit strategy and released guidelines[34] on 27 May 2020 for minimum standards regarding the resumption of river cruises in Europe after the Covid-19 crisis.

IMPACT OF COVID-19 ON IWT GOODS TRANSPORT

Regarding the goods transport sector, IWT transport volumes and demand have been declining continuously since the beginning of the crisis. The three main segments of goods transport (dry cargo, liquid cargo, containers) were affected differently. Based on the port data already available in April 2020 (compared to the same period in 2019), variations of waterside traffic for main western inland ports vary between -18% and -25%.[35] Danube port data for March-April 2020 showed a decrease of 25-35%. Despite this overall decline, a significant level of grain transportation from the ports of the Middle Danube were recorded in March and April 2020. This intensity decreased at the end of April. However, not all ports sustained a decrease in April 2020 compared to April 2019 as a result of the Covid-19 crisis. This is for instance the case of RheinCargo (Neuss, Düsseldorf and Cologne).

Dry cargo

The dry cargo segment was affected earlier and more strongly than the liquid cargo and container segments and a high decline in transport volumes can be observed, in particular regarding transport of coal, steel, building materials and agricultural products, albeit the existing regional differences. On some occasions, it has been possible for vessel owners operating in particularly affected market segments to switch to the transport of other goods.

In France for instance, while the construction sector was particularly affected, some vessel owners were able to transport cereals instead of building materials. In the Rhine area, the demand for the transport of dry cargo has declined significantly, in particular due to declining transhipment volumes in seaports such as Rotterdam. In some areas, an increase is reported, for instance in Germany, for the transport of fertilizers and building materials, especially in the canal areas and on the Danube. In France, the impact of the crisis was stronger at the beginning (a -40% decline in goods transport was reported initially while it currently fluctuates between -3% and -15% depending on the regions).

[34] Source: EBU and IG River Cruise; http://www.ebu-uenf.org/wp-content/uploads/River-Cruise-Minimum-Standard-Covid-19_FINAL-VERSION_1.0_EN.pdf
[35] Swiss Rhine Ports, Lyon, Mannheim, Karlsruhe, Strasbourg, Mulhouse-Rhin

a) Agricultural products, food and foodstuffs

In the ports of Strasbourg, Mannheim and Basel, a decline of 10-11% can be observed for agricultural products and cereals in April 2020 compared to April 2019. A strong reduction was also observed in the Swiss Rhine ports in March 2020, mainly explained by the fact that arrivals from China and departures to Asian regions were stopped or delayed. At the large port company *RheinCargo* (ports of Cologne, Neuss and Düsseldorf), foodstuff traffic witnessed increasing figures.

b) Iron, steel and non-ferrous metals

In general, this market segment was affected rapidly by the crisis, particularly due to the closure of industrial sites having recourse to this type of goods. Iron ore, steel, and coking coal account for around 25% of all volumes transported on the Rhine. Available port figures for April 2020 confirm that this segment was strongly affected by the crisis, with drops varying from -30% (e.g. Swiss Rhine ports) to -60% (e.g. Strasbourg). In Germany, IWW steel transport suffered from the decline in automotive industry but some steel work in Berlin/Brandenburg reported an increase in demand for metal products. In the Swiss Rhine ports, the decline in the steel sector was also a direct effect of the confinement measures and the closure of car factories in France and Italy.

c) Sands, stones, gravel and building materials

With the closure of main building sites throughout Europe and of relevant production sites (e.g. concrete plants in France), the building material segment was severely impacted, as can be observed from available port data. For instance, the Swiss Rhine ports reported a reduction of 35% in April 2020 for the building material segments compared to 2019.

In France, this market experienced a brutal slowdown in March and April with the closure of main building sites. The Haropa ports reported a strong decrease in activities in this segment (while it had been on the rise for several years driven by the Grand Paris Express project). With the decision to gradually re-open those sites in May, transport of building materials is expected to pick up again. In the port of Strasbourg, the effects were also severe, with a drop of approximately 30% both in March and April 2020. In Germany, an increase in demand was reported regionally for the building materials industry, especially for cement. *RheinCargo* reported a reduction for sands, stones and gravel.

d) Coal

The case of coal transport is specific. Indeed, while the Covid-19 crisis led to a significant drop in electricity demand, and therefore on coal transport in countries where electricity production is based on coal (e.g. in Germany), decline in coal transport is also structural as indicated on several occasions in this report. In Germany, according to press reports, the demand for hard coal for electricity generation has fallen by 44 % in Germany in recent months, thereby impacting IWW coal transport.[36] In Karlsruhe for instance, coal transport decreased by -80% in April 2020 compared to 2019, although this was also due to the rather low water levels in April 2020. In Mannheim, a decrease of almost 50% was also observed over the same period.

[36] *Source: Agora Energiewende "Winterstürme und Corona prägen das erste Quartal in der Stromerzeugung"*

Liquid cargo

So far, in the liquid cargo segment, the demand for heating oil remained rather stable. However, regarding the transport of fuels and chemical products, drops can be observed, depending on the regions.

a) Mineral oil products

The transport of mineral oil products is dependent on long-term trends (energy transition), seasonal patterns (winter: heating oil demand, summer: fuel demand), the current spot market oil price and the future market situation (when oil prices are expected to rise this leads to more storage-related transport but when falling oil prices are expected, this leads to less storage). Overall, the demand for heating oil remained stable. As the oil price decreased very quickly in early 2020, for a certain period of time (in March and April 2020) there was some extra transport demand in IWT due to replenishing of strategic oil storage.

This also led to oil products being stored in vessels (floating storage), which may make it possible to benefit from rising oil prices in the future. However, when these storage facilities were complete, and as the crisis continued, transport demand dropped due to demand-related factors, in particular due to a reduced mobility in aviation and road transport. Indeed, the Covid-19 effect on this goods segment is due to the almost complete grounding of global aviation and limitations for other transport modes.

b) Chemicals and fertilizers

Available port data point to a decrease in the transport of chemicals in April 2020, approaching -17% for the ports of Strasbourg, Mannheim and Basel. In Karlsruhe, a more important reduction (-23%) is observed. In Germany, the low level in demand for the transport of chemical products is due mainly to the production losses in the automotive industry. At the *RheinCargo* port group, transport volumes for salt (part of chemicals) increased strongly in April 2020, due to special circumstances (installation of new storage facilities).

Containers

In April and May, containers arrived in reduced volumes in European seaports and from Asia, a trade route on which this container segment is highly dependent. However, the situation varies greatly from one region and from one port to another. In Germany, the effects of the pandemic also resulted in significant volume declines. Such declines can be partly explained by the reduced activity in the automotive industry but also the fashion industry. However, the situation is described by some operators as being currently volatile as some reported that the number of container and ship transfers in the ARA ports has risen noticeably. Indeed, the decrease in container volume depended on the type of product, for example, the automotive industry – and therefore the corresponding container volumes – came to a complete halt, whereas the container volumes for the food industry decreased only slightly.

Figures of the *RheinCargo* port company for April 2020 showed a strong reduction in the waterside traffic of automobiles and machines, in the wake of the standstill of the car production in Germany.

In April 2020, the transport of containers remained stable in the Swiss Rhine ports. However, the situation was different regarding transport of empty containers, an essential segment to regulate and ensure that transport between inland and seaports can take place, which recorded some decrease both for imports and exports.

In France, the Haropa ports reported that container transport on the Seine decreased by 13.5% and that the Covid-19 effect started to be felt from mid-March onwards. On the river Rhône, container transport (in TEU) decreased by 73.7% in March 2020 and by 27.2% in April 2020 compared to the previous year. For the port of Strasbourg, while an increase in containers was observed in the first quarter of 2020 overall, less containers were handled in March and April 2020 compared to 2019 but only to a limited extent.

Looking at the situation worldwide in the maritime sector, container handling volumes in maritime shipping have been declining since February 2020 (compared to figures from the previous years), as can be seen in the Container Throughput Index of the RWI - Leibniz Institute for Economic Research and the Institute for Shipping Economics and Logistics (ISL)[37]. Indeed, after the strongest drop ever observed in February 2020, mostly resulting from the situation in Chinese ports at that time, a certain normalisation was observed in China in March 2020 when Chinese ports returned to normal operations as measures to contain the crisis were scaled back. However, a further decline in container handling took place in the rest of the world. In April 2020, a decline was observed in Chinese ports, as containers "left behind" during the crisis were loaded in March 2020. In the ports of other countries, container handling remained at a low level as in March.

2020 forecast for goods transport

Overall, it is difficult to make a forecast for goods transport for the rest of 2020 and anticipate the effects of the crisis on the further economic development of the sector and consumer behaviour. Firstly, this depends on the duration of the corona pandemic (and the possibility of a second wave) at national level but also at European and international level. Secondly, once the virus will have been contained in some parts of the world outside Europe, the economy is expected to pick up again. Relaxation of corona restrictions in many European neighbouring countries is now taking place. It is foreseen that that industry production will resume in many locations pointing to a resumption of transport in several segments.

Conclusions

For inland navigation, an additional challenge will lie in freight price developments which may severally be impacted as a result of overcapacity, thereby contributing to a further deterioration of the liquidity situation. This overcapacity is mainly caused by the structural decline which the sector is facing, particularly observed for coal transport as a result of the energy transition. However, the Covid-19 is expected to further intensify this trend.

In order to cope with the economic consequences of this crisis, support measures of various natures will need to be taken. Four main types of measures can already be identified:

- Measures to enable inland navigation companies which can still operate to continue their activity. Such measures should allow more flexibility in the application of existing regulations (employment, working conditions, mobility of crew) and

[37] *https://www.isl.org/en/containerindex*

enable continuity of navigation (securing opening of inland waterways, operation of infrastructure, good conditions for fuel supply of vessels, access to seaports and major cities, crew members' access to vessels, etc.)

- Strong and immediate financial support measures during the crisis, to avoid the bankruptcy of inland navigation companies and to prepare for its aftermath. Coordination in the application and availability of such measures should be ensured, with the support of the EU decision-makers, for the benefit of all IWT companies and the entire fleet in Europe.
- Creative, large-scale and ambitious measures to restart the inland navigation sector after the crisis. Such support measures should compensate for the loss of activity related to the downsizing of production, revive demand and support industrial production. Measures to rebuild the trust of users, particularly in the passenger sector, will be essential.
- Communication measures to strengthen the visibility of the inland navigation sector and to highlight its essential nature during and after the crisis.

LONG-TERM OUTLOOK
FOR INLAND WATERWAY FREIGHT TRANSPORT

For the present section, different studies and data have been analysed. The study *'Consequences of large transitions and world trade for IWT 2020-2040' by Royal HaskoningDHV* in December 2019[38] highlights long-term trends in inland navigation, including greening trends. This study contains the results of desktop research on long-term trends that are relevant for transport demand in IWT. It also contains the results of interviews (held between June and December 2019) with 25 large shippers/consignors in the Netherlands who gave their views on IWT. They were selected as those who are intensively making use of inland navigation for their incoming and outgoing logistics of raw materials and end products.

Three other main studies were analysed: the report *'Shipping in an era of digital transformation'* by the Berenberg Bank and the Hamburg Institute of International Economics from 2018 (Berenberg Bank/HWWI (2018)), the *UNCTAD report 'Review of Maritime Transport 2019' (UNCTAD (2019)) and the report 'Mid-term forecast for Germany in spring 2020' by the Kiel Institute for the World Economy*, published in March 2020 (IfW (2020)). Furthermore, empirical data from Eurostat, the World Steel Association, the German Association of Coal importers, national waterway administrations, and the port of Antwerp were collected and analysed.

Macroeconomic and industry projections from the *Oxford Economics* database completed the evidence gained from the literature review. It is worth noting that these projections are based on studies and a database that pre-date the start of the Covid-19 pandemic. Forecasted point estimates might thus be influenced, but longer-term trends are expected to remain valid, as the impact of the pandemic should operate in the same direction as these trends. This is the case for the trend of a regionalisation of production and logistics chains, which already started after the financial crisis, and which is expected to be amplified by the Covid-19 pandemic.

Agricultural products

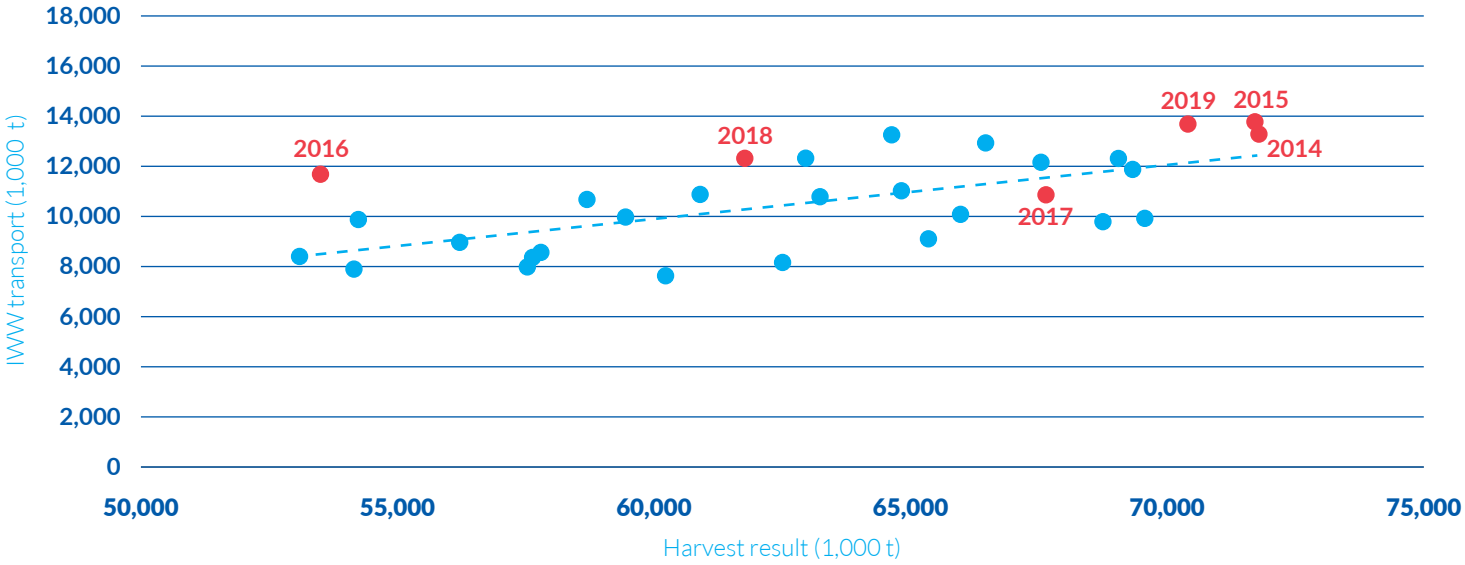
Outlook in brief: less large-scale production, more local production and less long-distance transport of agricultural goods are foreseen. The number of smaller vessels will continue to decrease, but there are options to cope with this, either by investing in own small vessels or by using small vessels belonging to corporations.

An empirical analysis of harvest results and inland waterway transport of agricultural products showed a strong correlation between both variables. In Germany, IWW transport of agricultural products increased between 2008 and 2014 but fell afterwards and stabilised somewhat in 2019. Variations in harvest results are a major explanation for this evolution.

[38] *The study is written in Dutch, and has the original Dutch name: 'Gevolgen grote transities en wereldhandel voor de binnenvaart 2020-2040'*

For France, a long-term correlation between harvest results and inland waterway transport was found. The year 2019 saw the third highest harvest result in France since 1990 and the second highest transport volume of agricultural products on French inland waterways since 1990.

FIGURE 1: **HARVEST VOLUMES IN FRANCE AND TRANSPORT OF AGRICULTURAL PRODUCTS ON FRENCH INLAND WATERWAYS** (1990-2019) **INCLUDING TREND LINE**



Source: CCNR analysis based on Eurostat data [iww_go_atygo] and [apro_cpsh1]. Crops Code 1,000 = Cereals including all kinds of wheat, spelt, rye, barley, oats.

Long-term forecasts for the monetised output in the agricultural sector (at constant prices of 2015) in the period 2020-2030 point out a yearly growth rate of 0.61% in France, 1.05% in the Netherlands, 0.66% in Hungary, but a yearly decrease of 0.59% in Germany.[39]

According to the interviews of large shipping companies within the study realised by *Royal HaskoningDHV*, IWT is a preferred mode of transport for long distance transport of agricultural and food products. However, the period 2020-2030 is seen as a transition period for agriculture.

A tendency for less large-scale production and more local or regional small-scale production is assumed. This tendency could lead to less long-distance transport of agricultural products and foodstuff products. Another trend which could negatively affect the volumes of agricultural products on inland waterways is the reduction in the number of small vessels, as grain is carried by small vessels in particular. Shipping companies see four options to ship small volumes of cargo:[40]

1) acquisition of their own small pushed barges and using them in combination with a push boat,

2) contracts with inland waterway cooperatives that have a minimum number of small vessels,

[39] *Source: Oxford Economics.*
[40] *Source Topsector Logistics / RoyalHaskoningDHV (2019), Gevolgen grote transities en wereldhandel voor de binnenvaart 2020-2040*

3) reverse modal shift: use trucks instead of small vessels,

4) change in logistical patterns.

Shippers have already made use of options 1 and 2 and their experience was overall very positive. Until now there has been no reverse modal shift but this could be expected for the future.

Foodstuffs and food products

Outlook In brief: for western Europe, a reduction in foodstuff production due to less livestock activities, and more local, decentralised food production is foreseen. This reduces mass cargo transport over long distances. A shift of foodstuff production from western to eastern Europe and a change from an Atlantic trading route to an eastern European trading route for oilseeds is expected. The Danube could become more important for these cargo streams, while the ARA-Rhine region would lose volumes.

Worldwide growth of population leads to more demand for agricultural products, food and foodstuffs. But it is supposed that the largest part of this growth will take place in developing countries. Societies in western Europe are becoming more conscious of the sustainability of food products and logistical chains and aim to avoid emissions from long-distance transport.

For western European countries, it is expected that the following trends will have an impact on food and foodstuff production as well as on livestock activity in the next two decades:

- more local, sustainable, small-scale and decentralised production of food for human beings,
- less multi-stage logistical chains in the food sector: multi-stage production and transport around the world will be avoided,
- more end production taking place where the raw materials and the end consumer are located,[41]
- more transparency about where food comes from, how it is produced, how it is transported, and which emissions are caused by its transportation and in what volumes,
- the spread of diseases leads to more resistance towards large-scale production in the population.

Large volumes of oilseeds and raw materials in the foodstuff market are currently imported via Dutch seaports from South America and Asia. Experts from large shipping companies expect that they will be partially substituted by similar commodity streams coming from middle and eastern Europe. Although inland navigation would probably be involved in this second case, the geographical focus of cargo streams could change, and a shift from the ARA-Rhine axis to the Rhine-Main-Danube axis would be associated.

An evolution that is pointing to the same geographical shift (west to east) is the expectation of large shipping companies from the food and foodstuff sector that

[41] *This hypothesis is also supported by Berenberg Bank/HWWI (2018), UNCTAD (2019) and McKinsey Global Institute (2019).*

a delocalisation of livestock activities from the Netherlands to Poland (poultry breeding), Hungary and Romania will take place in the future. The reason is that the Netherlands struggle with increasing nitrogen emissions from agriculture and livestock activities. The sector is also confronted with closures or mergers of foodstuff companies.

Iron ores, steel and metals

Outlook in brief: transport of metals will remain important in Europe, due to export flows of European high-quality steel to growing markets overseas. For iron ore, the transport demand outlook for western Europe is more or less negative, due to a higher recycling rate of steel, environmental pressures to reduce emissions and change steel manufacturing, and a higher degree of saturation in steel demand. In eastern Europe, steel demand is less saturated, and steel production and iron ore are supposed to achieve relatively high absolute growth due to catching-up mechanisms in economic development.

There are currently two main technologies in steel production. Oxygen steel production makes use of iron ores and has a market share of 70% in Germany, 69% in France, 69% in Romania, and 91% in Austria. The second major technology uses electric furnaces, by which scrap is melted and transformed to new steel in a recycling process. This technology has a market share of 30% in Germany, 31% in France, 31% in Romania and 9% in Austria.[42]

In the wake of a larger role of the circular economy in the future, recycling of metals and steel (scrap or metal waste) could be an important part of European steel making in the future. The interviews with Dutch shipping companies reflected pronounced expectations of a higher recycling rate of metals and steel and a decreasing tendency in steel demand and steel production in western Europe.

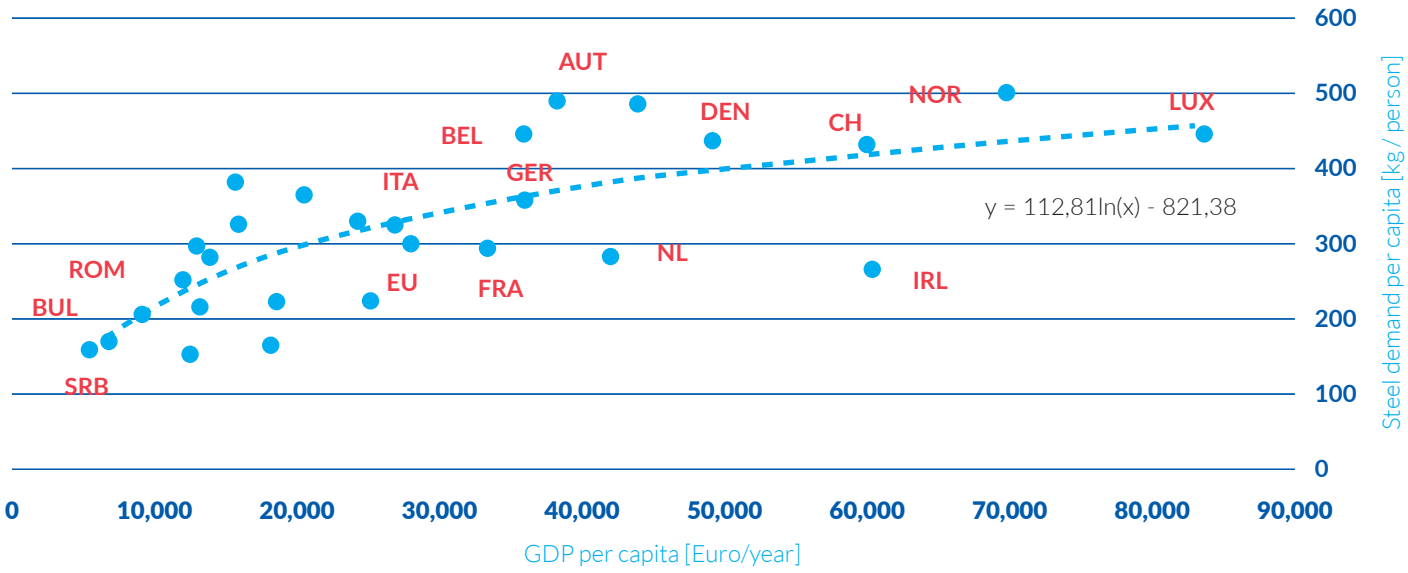
The impact of this trend on the transport of iron ore and metals is different. For metals, the outlook is better than for iron ore, as the demand for high quality steel is increasing in developing countries, giving western Europe new export markets, also in times of a saturated inland consumption of steel. However, iron ore transport will be reduced by more recycling of steel, less emission intensive production technologies, and also by less steel demand in western Europe.

Based on an empirical analysis, the following figure shows the relation between GDP per capita and steel demand per capita for 27 European countries and the EU in total. Countries with a higher GDP per capita have, in general, also a higher steel demand per capita (steel production plus imports minus exports, per capita).[43]

The curve reflects a certain saturation of steel demand in highly developed countries in northern and western Europe. It also shows a low level of steel demand in eastern European countries so far, but the potential of a strong increase in the wake of economic growth and development.

[42] Source. World Steel Association (2019), Steel Statistical Yearbook
[43] Steel demand per capita, as defined by the World Steel Association, is derived from apparent steel use. Apparent steel use is defined as production plus net imports minus net exports and is commonly used to measure steel demand.

FIGURE 2: **GDP PER CAPITA AND STEEL DEMAND PER CAPITA**



Source: CCNR analysis based on data from Eurostat [nama_10_pc] and World Steel Association

Countries in western and northern Europe are located on flat segments of the curve, meaning that a rise in GDP per capita would lead to a limited increase in steel demand, compared to countries in the middle and lower Danube region (Bulgaria, Romania, Serbia), located on steep segments of the curve, where a rise in GDP per capita would lead to more absolute growth in steel demand.

Sands, stones, gravel and building materials

Outlook in brief: the outlook is positive, in particular in western Europe. Growth of transport will be based on existing materials, in parallel with demographic growth and the increase of activity in the housing market. A concentration on larger waterways is likely. Untapped potentials lay in urban inland waterway transport of construction materials, by avoiding negative external effects of road transport.

Shippers think that inland vessels will remain the preferred transport mode for the delivery of all kinds of sands, stones, gravel and building materials. They do not expect any major modal shift which would reduce the market share of water transport in this business. However, a consolidation process is taking place. Larger entities are being created, by acquisitions, so that scale effects will play a role in the future. The number of small concrete mortar plants as well as sand and gravel companies located along small waterways are expected to be reduced.

Larger entities located alongside the main inland waterways are formed. This leads to less demand for smaller vessels. However, long-distance transport of sands, stones and building materials is not endangered, as sand and gravel companies (larger ones) will remain to be located alongside inland waterways. In the coming years, large volumes of sand and gravel are expected to come on the market as a result of dredging, in order to give more space to rivers, and there is a great need of materials for dike reinforcement.

According to projections from Oxford Economics, the output in the construction sector will grow from 2020 until 2030 by a yearly average rate of 1.4% in France and 1.1% in Belgium, Germany and the Netherlands. For countries in eastern Europe, demographic projections – which are an important baseline for the future construction output - are less positive than for western Europe. The size of the population in Poland is expected to be 2.4% smaller by the end of this decade than in 2019, and for Romania, a drop of 8.5% is projected. For France, a growth of 3.4% is foreseen, for Germany +1.1%, for Belgium +4.7% and for the Netherlands +5.8%.[44]

Urban inland waterway transport in congested areas, where IWT can contribute to a more sustainable building materials logistics, has a fundamental growth potential. At present, this potential is by far not sufficiently exploited, as inland navigation is not sufficiently known as an alternative by many players in this field.

Coal

Outlook in brief: strong reduction of coal transport in western Europe in the coming 20 years, but at least stabilisation, if not growth of volumes in eastern Europe.

Coal volumes will decrease strongly in the next two decades, as many countries have decided to close coal fired power plants, in line with the aim to fight climate change. Germany, for example, will close its coal fired power plants gradually from 2022 onwards, until all plants shall be closed by 2038. According to figures from the *German Association of Coal Importers*, electricity generation accounted for 59.3% of all coal consumption in Germany in 2018 and steel production for 39.3% (the rest being used for heating energy).

Although world trade of coal increased in 2019 by 0.7% to 1.22 billion tonnes, German hard coal imports (all transport modes) have fallen significantly in 2019 by around 15% or 7 million tonnes. Electricity generation from hard coal even fell by 31%. Within only three years it has approximately halved to about 57 terawatt hours (TWh). In France, coal demand has also fallen substantially in recent years and is expected to also fall in the next decade. For Bulgaria and Romania, a rising coal demand is expected based on Oxford Economics forecasts. This result is similar to the findings about steel demand and iron ore transport in eastern Europe.

Chemicals and mineral oil products

Outlook in brief: it is assumed that mineral oil products will be part of a propulsion mix in the next two decades, together with batteries, biofuels and other propulsion systems. However, there are no major growth prospects for mineral oil products and a gradual decline is assumed. For chemicals, the outlook is far more growth-orientated, and IWT is the preferred mode of transport for the chemical industry.

Clients of the chemical industry exist in various economic sectors, especially in the agricultural sector (fertilizers), the plastics, automotive, construction and paper and pulp industries. Expert interviews determined that the strong position of IWT for chemicals shall be kept. Other modes of transport are not viewed as a viable alternative to inland navigation, except for pipelines. The forecast for chemical production in the EU points to a 1.1% average annual growth rate over the next decade.

It is worth clarifying that mineral oil products can be considered as fuel or cargo in the transport sector.

[44] *Source: Oxford Economics*

TABLE 1: **OIL PRODUCTS USED AS A FUEL OR CARGO ACCORDING TO THE BRANCH OF THE TRANSPORT SECTOR CONCERNED** [45]

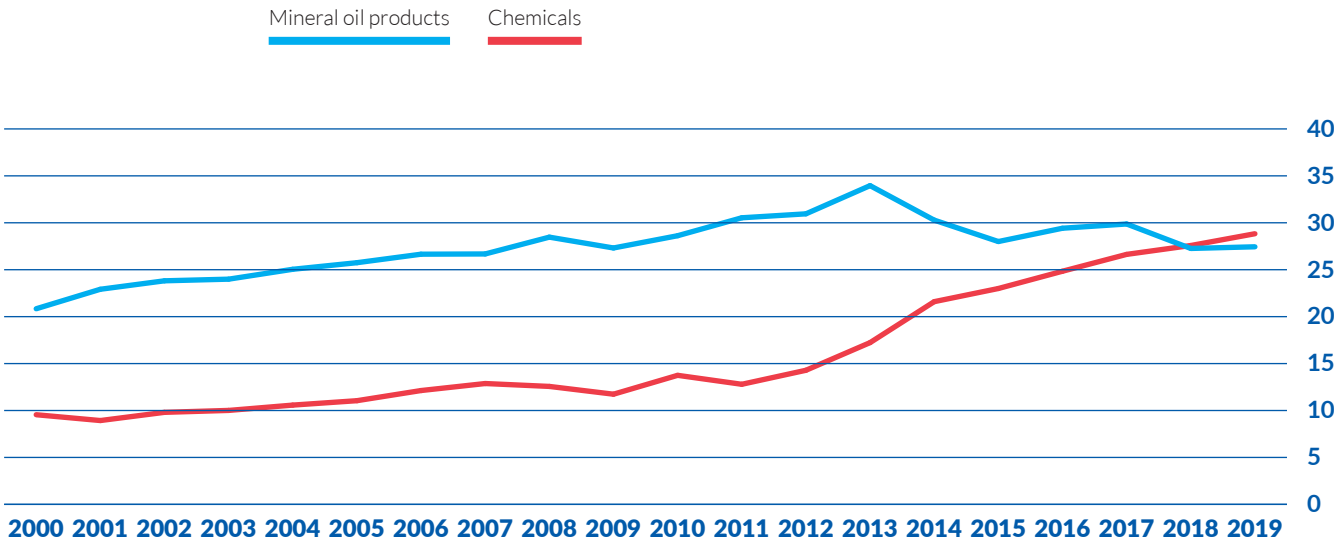
Product name	Used as fuel	Used as cargo
Gasoline, Diesel	Road	Long-distance transports of fuel are mainly executed by maritime & inland vessels, pipelines or railways. Short distance transports are often done by trucks, e.g. for transports of gasoline and diesel between storage depots and gasoline stations.
Gasoil	IWT	
Heavy fuel oil	Maritime	
Kerosene	Aviation	

Source: CCNR

When considering oil products as a cargo, inland vessels have a significant modal split share, generally above the average in IWT. For instance, the modal share of IWT[46] for refined petroleum products is 91 % in the Netherlands and 35 % in Germany.

In the wake of the energy transition, demand for oil products has decreased and will decrease further. It will impact inland waterway transport of oil products. It is assumed that oil products will be part of a propulsion mix in the next two decades, together with batteries, biofuels and other systems and will gradually be substituted by other energy sources. However, there are currently financial and technical berriers to the development of carbon neutral technologies, preventing their full-scale deployment. Several scenarios towards zero emission in the IWT sector are currently under study. As data from the port of Antwerp show, mineral oil products have recorded losses since 2013, while chemicals have gained large volumes.

FIGURE 3: **INLAND WATERWAY TRANSPORT OF THE PORT OF ANTWERP FOR CHEMICALS AND MINERAL OIL PRODUCTS** (IN MILLION TONNES)



Source: Port of Antwerp

[45] *Rail transport in Europe today is mostly electrified, but diesel is still used as a fuel in some parts of the network.*
[46] *Within transport performance by rail, IWT and road.*

Containers

Outlook in brief: world trade and maritime container transport have slowed down significantly since the financial crisis 2009 and are presumed to slow down further. There are tendencies to more regional logistic and production chains. IWW container transport will be influenced by this slowdown, as it is strongly linked with maritime trade.

The strong transport demand in worldwide container shipping which started in the 1990s and accelerated in the 2000s emanated from the deepening of the international division of labour. However, down from a long-term growth trend of 5.8% per year during the past two decades, global containerised trade increased by only 2.6% in 2018 and is estimated to have grown by 3.2% in 2019.[47] The annual growth rate between 2019 and 2024 is expected to be even lower, not only due to the Covid-19 pandemic but also due to a general slowdown in international trade.

As was already the case before the Covid-19 crisis, international trade has stopped accelerating and even started decelerating and its importance relative to GDP has decreased since the financial crisis of 2008/2009. This led to the fact that, according to the McKinsey Global Institute (2019), the share of exports in gross output in goods-producing value chains decreased from 28.1% to 22.5% between 2007 and 2017, indicating a declining trade intensity of value chains. As analysed by UNCTAD (2019), the drivers of this development might be profound structural forces, including a decreased growth of vertical specialisation and the global fragmentation of production, a structural change away from investment goods to the less trade-intensive categories government and consumer spending, and an increasing shift of global consumer demand away from tradeable goods to services.

The described trends are only strengthened by the present protectionist tendencies and impacts of the Covid-19 pandemic so that a regionalisation and a partial de-globalisation seem likely to happen.[48] As the Kiel Institute emphasises: *"At present, the Corona crisis is drastically highlighting the risks associated with wide-spread global supply chains trimmed for cost efficiency and the avoidance of redundancies in the value-added networks."*[49]

Environmental aspects play a certain role too. An increase in maritime transport costs due to more strict environmental regulations could have effects on maritime freight transport. An example is the regulation imposed by the International Maritime Organization (IMO) on 1 January 2020, that requires a worldwide sulphur cap of 0.5% on fuel content. This could increase costs of maritime and world trade and contribute to more regional production and logistic chains.[50]

For container transport on inland waterways, these trends are also relevant as inland container barging is heavily linked to maritime container transport.

[47] *See: UNCTAD (2019)*
[48] *See: Berenberg Bank/HWWI (2018), McKinsey Global Institute (2019), and UNCTAD (2019)*
[49] *Kiel Institute for the World Economy (2020)*
[50] *See: Berenberg Bank/HWWI (2018) and UNCTAD (2019)*

Summary

TABLE 2: **TRADITIONAL CARGO SEGMENTS**

Segment	Potential	Most important driving factors	Long-term trend for IWT
Chemicals	++	High degree of innovation of the chemical industry in Europe	IWT remains the preferred transport mode for chemicals
Containers	0/+	Reduction of growth rates in world trade and maritime shipping	Growth continues but with lower rates
Sands, stones, building material	+	IWT is a preferred mode of transport for shipping companies and growth in the construction sector will be positive in western Europe (WE)	Moderate growth on existing long-distance routes, higher potential for growth in urban areas
Metals and metal products	0/+	Economic growth in emerging markets leads to more demand for steel	Metals and steel transport can grow on a limited basis
Mineral oil products	0/-	Mineral oil products are still needed as a fuel in the next decade, but a gradual decline is already underway	Gradual decline in most regions but positive exceptions are possible
Foodstuffs	WE*: 0/- EE: 0/+	Decrease of livestock activities in western Europe due to nitrogen and other emissions, delocalisation of parts of these activities to eastern Europe (EE)	Decrease in foodstuff transport due to less livestock activity in WE. For EE, a more stable or even positive evolution is expected
Iron ore	WE: - EE: +	WE) A certain saturation in steel demand and less iron ore intensity in steel production EE) Stronger growth potential in steel demand	Iron ore transport is expected to decrease in WE while it is thought to increase for a certain period in EE
Coal	WE: - EE: 0/+	Phasing out of coal in the energy sector and gradual decline of coal use in the steel industry	Decrease in coal transport in WE, at least stagnation in EE

Sources: CCNR, Royal HaskoningDHV
**WE = western Europe; EE = eastern Europe*

TABLE 3: **NEW CARGO SEGMENTS**

Segment	Potential	Most important driving factors	Long-term trend for IWT
Project cargo, heavy and oversize cargo	+	Energy transition (windmills), electricity demand (transformers), bottlenecks for transporting this type of cargo by other modes of transport	IWT benefits from its large space capacities for project cargo, heavy and oversized cargo and its flexibility
Recycling, circular economy	+	Industrial production is transformed by the need for a large-scale reduction of emissions	IWT is already active in the transport of recycling material and is expected to increase this activity
Biomass	+	Energy transition, need for more biofuel, compensation for reduction in foodstuff production	IWT has large capacities for transporting these materials
Hydrogen, batteries	+	In the future energy system, hydrogen can be an important element, possibly in combination with electricity and batteries	Trend is still at the beginning, transport possibly by pipeline or by containers on maritime ships and inland vessels (or by a combination of these modes). Large potential from 2030 onwards

Sources: CCNR, Royal HaskoningDHV

GLOSSARY

ARA region: Amsterdam-Rotterdam-Antwerp

AVERAGE UTILISATION RATE (OF A CARGO FLEET): relation between the needed tonnage (needed due to transport demand in a certain year) and the available tonnage in that same year, in percentage terms.

BN: Billion

CONTAINER EXCHANGE ROUTE (CER): in the Netherlands, this route links Maasvlakte's container companies and allows the companies to minimise the cost of container exchanges. This improves their respective hinterland and transshipment process and strengthens Rotterdam's competitive position as a container hub.

DANUBE COUNTRIES: Austria, Bulgaria, Croatia, Hungary, Romania, Serbia, Slovakia

DRAUGHT OF A VESSEL: distance between the vessels' keel and the waterline of the vessel

ECB: European Central Bank

EQUIVALENT WATER LEVEL: refers to a low water level (lower threshold) which is specific for each gauge station. On a multiannual average, the water levels do not fall below this threshold on more than 20 ice free days per year. This means that this water level is reached or exceeded at a gauging station on an average of 94% of days in a year (= on 343 days) over a reference period of several decades.

EU: European Union

EUROPE: European inland navigation in this report includes two countries not belonging to European Union, Switzerland and Serbia.

FARAG region: Flushing, Amsterdam, Rotterdam, Antwerp, Ghent

FREIGHT RATE: price at which a cargo is delivered from one point to another.

GDP: Gross Domestic Product (basic measure of the overall size of a country's economy)

IWT: Inland Waterways Transport

IWW: Inland Waterways

LOWER RHINE: section of the Rhine which flows from Bonn, Germany, to the North Sea at Hoek van Holland, Netherlands. Within the figures for the traditional Rhine, the term "Lower Rhine" refers to the stretch of the Lower Rhine in Germany.

MIO: Million

MODAL SPLIT SHARE: share of inland waterway transport performance in total transport performance (IWT, road, rail)

NORTH SEA PORT: the name of the port formed by the cross-border merger between Zeeland Seaports (Flushing, Borsele and Terneuzen) in the Netherlands and Ghent Port Company in Belgium

RHINE COUNTRIES: Belgium, France, Germany, Luxembourg, the Netherlands, Switzerland

RUHR AREA: a dense urban area in western Germany and the largest industrial area in western Europe

SMALL VESSELS: vessels with a loading capacity of up to 1,500 tonnes. According to an alternative definition, small vessels have a loading capacity of 650 tonnes or less.

STEEL DEMAND PER CAPITA: steel production plus imports minus exports, per capita

TEU: Twenty-foot Equivalent Unit (unit for container volume)

THE EUROPEAN CRUISE FLEET: cruise vessels with more than 39 beds which are operating in the EU and in Switzerland.

TKM: Tonne-Kilometer (unit for transport performance which represents volume of goods transported multiplied by transport distance)

TRADITIONAL RHINE: section of the Rhine from Basel to the border between the Netherlands and Germany

UPPER RHINE: section of the Rhine in the Upper Rhine Plain between Basel in Switzerland and Bingen in Germany

WATERSIDE GOODS TRAFFIC: loading or unloading activity in ports, which includes inland vessels.

NATIONAL STATISTICS OFFICES

Acronym	Original Name	English Name	Country
BFS	Bundesamt für Statistik	Federal Office for Statistics	Switzerland
CBS	Centraal Bureau voor de Statistiek	Central Statistical Office	The Netherlands
Destatis	Statistisches Bundesamt	Federal Statistical Office of Germany	Germany
GUS	Główny Urząd Statystyczny	Statistics Poland	Poland
INSSE	Institutul National de Statistica	National Institute of Statistics	Romania
KSH/ HCSO	Központi Statisztikai Hivatal	Hungarian Central Statistical Office	Hungary
Statistik Austria	Bundesanstalt Statistik Österreich	Austrian Federal Institute of Statistics	Austria

BOOKS, JOURNAL ARTICLES AND STUDIES

Original Name	Country
www.agora-energiewende.de/blog/winterstuerme-und-corona-praegen-daserste-quartal-in-der-stromerzeugung/, abgerufen 28.05.2020: „Winterstürme und Corona prägen das erste Quartal in der Stromerzeugung“	Germany
Annual report 2019, Port of Rotterdam Authority	The Netherlands
Binnenschifffahrt online	Germany
BLN Schuttevaer	The Netherlands
Der Fluss-Kreuzfahrtmarkt 2019, SeaConsult	Germany
DVZ	Germany
European Economic Forecast of the European Commission, Autumn 2019	EU
Gevolgen grote transities en wereldhandel voor de binnenvaart 2020-2040, Topsector Logistics / RoyalHaskoningDHV (2019)	The Netherlands
Mid-term forecast for Germany in spring 2020, the Kiel Institute for the World Economy, March 2020	Germany
NPI	France
Oil Prices Nose-Dive as OPEC and Russia Fail to Reach a Deal, New York Times 6th of March 2020	USA
Outlook from April 2020, IMF World Economic Outlook Database	World
Review of Maritime Transport 2019, United Nations Conference on Trade and Development (UNCTAD) 2019	World

Original Name	Country
Seatrade Cruise News	United Kingdom
Shipping in an era of digital transformation, the Berenberg Bank and the Hamburg Institute of International Economics 2018	Germany
Stakeholder interviews	Europe
The River Cruise Fleet, Hader, A. 2019	Germany
Travel Weekly	United Kingdom

OTHER SOURCES

Original Name	English Name	Country
ABN-AMRO	ABN-AMRO	The Netherlands
Agencija za upravljanje lukama	Port Governance Agency of Serbia	Serbia
Berenberg Bank	Berenberg Bank	Germany
Bundesanstalt für Gewässerkunde	German Federal Office for Hydrology	Germany
Bundesministerium für Verkehr und digitale Infrastruktur	Federal Ministry of Transport and digital Infrastructure	Germany
Bundesverband der Deutschen Binnenschifffahrt (BDB)	Federal Association of German Inland Navigation	Germany
CCNR/ZKR/CCR	CCNR	Europe
Centraal Bureau voor de Rijn- en Binnenvaar (CBRB)	Central Bureau for Inland Barging	The Netherlands
Container operators on the Rhine	Container operators on the Rhine	Europe
Corporation Inland Tanker Barge Owners (CITBO)	Corporation Inland Tanker Barge Owners (CITBO)	Belgium
De Vlaamse Waterweg	Waterways in Flanders	Belgium
Deutscher Reiseverband (DRV)	German Travel Association	Germany
Direction générale opérationnelle de la Mobilité et des Voies hydrauliques	Operational Directorate General for Mobility and Waterways	Belgium
Donaukommission	Danube Commission	Europe
Eidgenössische Steuerverwaltung	Federal Tax Administration	Switzerland
Entreprises Fluviales de France (E2F)	French River Companies	France

Original Name	English Name	Country
European Barge Inspection Scheme (EBIS)	European Barge Inspection Scheme (EBIS)	Europe
European Barge Union (EBU)	European Barge Union (EBU)	Europe
European Commission	European Commission	EU
EUROSTAT	EUROSTAT	EU
Generaldirektion Wasserstraßen und Schifffahrt	Directorate-General for Waterways and Shipping	Germany
Hamburgisches WeltWirtschafts Institut (HWWI)	Hamburg Institute of International Economics	Germany
IG RiverCruise	IG RiverCruise	Europe
Institut für Seeverkehrswirtschaft und Logistik (ISL)	Institute of Shipping Economics and Logistics (ISL)	Germany
International Sava River Basin Commission	International Sava River Basin Commission	Europe
ITB – Institut pour le Transport par Batellerie/ Instituut voor het Transport langs de Binnenwateren	Institute for transport by skippers	Belgium
IVR	IVR	The Netherlands
Kieler Institut für Weltwirtschaft	Kiel Institute for the World Economy	Germany
Land Niederösterreich	Federal State of Lower Austria	Austria
McKinsey Global Institute	McKinsey Global Institute	World
Ministerstvo dopravy České republiky	Ministry of Transport of the Czech Republic	Czech Republic
National fleet data	National fleet data	Europe
National register of Luxembourg	National register of Luxembourg	Luxembourg
OECD	OECD	World
Oxford Economics	Oxford Economics	World
Panteia	Panteia	The Netherlands
PJK International	PJK International	The Netherlands
Ports mentioned in the report	Ports mentioned in the report	Europe

Original Name	English Name	Country
Rijkswaterstaat	Ministry of Infrastructure and Water Management	The Netherlands
Royal HaskoningDHV	Royal HaskoningDHV	The Netherlands
SeaConsult	SeaConsult	Germany
Statistisches Amt für Hamburg und Schleswig-Holstein	Statistical Office of Hamburg and Schleswig-Holstein	Germany
The World Steel Association	The World Steel Association	World
Topsector Logistics	Topsector Logistics	The Netherlands
United Nations Conference on Trade and Development (UNCTAD)	United Nations Conference on Trade and Development (UNCTAD)	World
Verein der Kohlenimporteure	German Association of Coal importers	Germany
Voies Navigables de France	Navigable Waterways of France	France
Wasserstraßen-und Schifffahrtsverwaltung des Bundes (WSV)	German Waterway and Shipping Administration	Germany
Wirtschaftsvereinigung Stahl	German Steel Federation	Germany

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